

## Article

# Could Commoning Unlock the Potential of Integrated Landscape Approaches?

Xiao Lu Wang <sup>1,\*</sup> and Wai Fung Lam <sup>2</sup><sup>1</sup> School of Design, Hong Kong Polytechnic University, Hong Kong 999077, China<sup>2</sup> Department of Politics and Public Administration, The University of Hong Kong, Hong Kong 999077, China; dwflam@hku.hk

\* Correspondence: norah.x.wang@polyu.edu.hk

**Abstract:** Background: Landscape approaches are recognized for their holistic view on development and conservation. However, they encounter sustainability and localization challenges due to short-term funding constraints and dependence on external experts. In this paper, we examine commoning as a means of land tenure interventions that enable mixed land use and community stewardship. Methods: Based on desk research and 20 interviews, an institutional analysis was performed on two landscape management cases to shed light on commoning processes and land tenure changes, as well as their impact on land use and community stewardship. Results: In the first case, a collaborative governance model was developed through policy interventions, which provided not only institutional frameworks but also financial resources to incentivize landowners to cooperate with nature conservation groups and share management rights over their land. In the second case, a community land trust model was used by self-organized civil society actors to develop ecovillage practices and ensure the balance of conservation and agricultural uses. In both cases, we found that land tenure innovations in terms of boundary rules, choice rules, aggregation rules, as well as rules for higher-level action situations, were key to enabling land rights sharing, mixed land use, and different levels of stewardship depending on the preferences and capacity of stakeholders. Conclusions: Commoning could address the sustainability and localization challenges faced by landscape approaches to mixed land use and long-term adaptive management.



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**Keywords:** integrated landscape approaches; land tenure intervention; institutional analysis; commoning

## 1. Introduction

Agricultural production is one of the most important human uses of rural and peri-urban landscapes [1]. Landscapes generate a flow of ecosystem services, including provisioning, regulating, supporting, and cultural ecosystem services [2,3]. However, the Millennium Ecosystem Service Assessment (2005) shows that the delivery of some provisioning services (e.g., food production) can cause unintended declines in other regulating or supporting services (e.g., flood control and pollination) [3–7]. Intensive agricultural production leads to monoculture cropping, the over-simplification of landscape structure and function, and a loss of resilience in agricultural landscapes [1].

This begs the question of how to safeguard landscape multifunctionality and minimize trade-offs. The concept of multifunctionality recognizes the complexity and interconnectivity of natural systems, understanding that management practices aimed at optimizing a specific function might inadvertently impact other functions. Integrated landscape

approaches (ILAs) have garnered significant interest from both the international scientific community and policymakers due to the approaches' acknowledgment of landscape multifunctionality and the efforts to balance conservation and development goals [8–12]. Scholars have formulated guiding principles for ILAs, which underline adaptive management, common concern entry point, landscape multifunctionality, stakeholder engagement (e.g., inclusivity), good governance, conflict resolution, participatory monitoring, and resilience building [9,13].

However, the ability of ILAs to effectively address the trade-offs between agriculture and other land uses, despite much optimistic academic rhetoric, has been questioned [10,11,14,15]. The challenges arise from a broad definition, difficulties in operationalization and implementation, sectoral bias, power dynamics, short-term funding constraints, and a lack of evaluation [16–19]. To improve the practical implementation of the ILAs, Freeman, Duguman, and Minang (2015) operationalized Sayer et al.'s (2013) principles and detailed implementation processes [13]. For example, multistakeholder platforms (MSPs) are central to current ILA initiatives, recognizing that no single actor or entity alone can address complex landscape-scale 'wicked problems' and achieve integrated landscape governance [20,21]. Zambia has seen a proliferation of MSPs at national, district, and local governance levels because of the devolution of natural resource governance and decision-making [22].

James Reed and his colleagues expanded on Sayer's principles by introducing mixed land-use strategies and integrating spatial planning tools to identify areas suitable for different land uses in a landscape [23]. Reed's work highlights the importance of balancing conservation, agriculture, and development within landscapes, rather than treating them as separate sectors. While Reed and his colleagues have proposed robust methods to operationalize ILAs, the sustainability of these methods often hinges on the availability of long-term funding and external experts, which can limit their ability to monitor over extended periods, maintain stakeholder engagement, and implement adaptive co-management.

But sustainable and adaptive landscape management must be context-specific, localized, and entail in situ experiments that cannot be achieved through top-down measures [24–27]. In their review of case studies on landscape management, Reed et al. (2017) only found a few examples of community-based approaches despite the rhetoric in support of bottom-up self-organized approaches to landscape management [11,28,29]. This may stem from a lack of land rights among land users, such as tenant farmers and other stakeholders who value land sustainability. People who believe their actions can have an impact and are given the opportunity to take responsibility are more inclined to participate and show stewardship [30].

Thus, we suggest that commoning may hold the key to addressing the sustainability and localization challenges encountered by current ILAs. The term 'commoning' captures the relationship between resources (e.g., lands and buildings) and the communities that live near them and claim, utilize, and depend upon them for essential human needs [31,32]. Commoning, in essence, is about sharing institutional control of resources and rights with stakeholders [33,34]. Urban studies have shown many successful cases of regenerating wasted public lands and buildings when bundles of rights are vested in citizens [35–37].

In addition to promoting community stewardship, we argue that commoning can be enabled and arranged institutionally to promote institutional diversity, accommodate different land-use interests, and balance land development and conservation. Ostrom's analysis of the management regimes of common-pool resources (CPRs) distinguishes two key action situations: appropriation and provision [28,38]. Appropriation is concerned with the extraction and use of the resource, with a focus on the distribution of resource units

among users and the maintenance of order in which the extraction is performed. Provision, on the other hand, is concerned with making sure the resource is made available and properly maintained by incentivizing users to contribute to the supply and maintenance of the resource and preventing free-riding behaviors [39,40]. To prevent overuse and ensure resource reproduction, institutional frameworks need to be put in place to determine who can take what position with what rights and responsibilities [39].

Schlager and Ostrom (1992) defined a series of five rights: access, withdrawal, management, exclusion, and alienation (See Table 1) [41]. Access rights allow people to enter a defined area and enjoy its benefits without removing any resources, whereas withdrawal rights allow people to obtain specified products from a resource system and remove that product from the area for proscribed uses. Management rights allow people to participate in resource and infrastructure management. Exclusion rights allow people to participate in the determination of who has the right of access or withdrawal or management. Alienation gives people the right to sell, lease, bequeath, or otherwise transfer any of the preceding component rights. Different positions have different bundles of rights. An owner has all rights, and a proprietor has all rights except alienation. While a claimant has access, withdrawal, and management rights, an authorized user has access and withdrawal rights. An authorized entrant only has access rights.

**Table 1.** Bundles of rights associated with positions (Schlager & Ostrom, 1992) [41].

|                   | Authorized Entrant | Authorized User | Claimant | Proprietor | Owner |
|-------------------|--------------------|-----------------|----------|------------|-------|
| Access rights     | +                  | +               | +        | +          | +     |
| Withdrawal rights |                    | +               | +        | +          | +     |
| Management rights |                    |                 | +        | +          | +     |
| Exclusion rights  |                    |                 |          | +          | +     |
| Alienation rights |                    |                 |          |            | +     |

In most CPR cases studied by Ostrom, the same individuals were directly engaged in both appropriation and provision, and they shared the same interest in a resource [38]. Moreover, many traditional commons are often located in remote rural areas or customary lands where de facto, if not de jure, self-governance is acquiesced [28]. In other words, all resource users share the same rights and positions. The eight institutional design principles for CPR commons, summarized by Ostrom (1990), enable resource users to see the link between their individual behaviors and the collective outcomes, to better utilize local information in problem-solving and conflict resolution, to develop reciprocity and long-term working relationships with one another, and to learn and respond to the changing environment [28]. These institutions provide the foundation for self-governance and hence the resilience of a resource system [42].

But in the case of landscape management, stakeholders may be interested in different land uses and exhibit varying levels of commitment to land keeping or maintenance. Colding and Barthel (2013) suggested that a certain level of diversity in institutional arrangements is necessary in order to match people's preferences and capacities for participating in urban commons [43]. For example, many individuals find it hard to partake in more formalized and organized urban green commons, like allotments, which require considerable commitments and duties in participation. In contrast, public-access community gardens allow for much looser frameworks of participation. Thus, the questions of how to accommodate different land-use interests, balance land development and conservation, and incentivize stewardship based on stakeholders' capacities lie at the center of understanding commoning as an ILA approach.

Landscape stakeholders may be given different positions, rights, and responsibilities in landscape management through revising boundary rules (i.e., eligibility criteria for each position) and position rules (i.e., types of positions such as owner, claimant, authorized user, and authorized entrant). As a result, in a landscape management regime, positions could be held by different rightsholders, ranging from interested citizens, private businesses, and voluntary associations to public agencies, who then hold varying rights over and responsibilities for land resources. For example, customary land, typically held collectively by a community, can be leased to private individuals such as tenant farmers for agricultural production. In this case, tenant farmers are authorized users. The community can also involve tenant farmers in landscape management, thus making tenant farmers claimants. Prior studies show that the innovation of land tenure regimes could contribute to efficient uses of resources and unleash productivity [44,45]. However, reckless innovations could also lead to resource overuse. For example, rural land reforms in China have led to expedited urban sprawl and loss of farmlands [46–49].

More research is needed to gain insights into commoning processes, particularly how they can be institutionally enabled and arranged to accommodate different land-use interests, balance land development and conservation, and promote community stewardship [34,43,50,51]. To gain an in-depth understanding of institutional processes, we used the case study methodology. Case studies allowed us to purposely select two institutional contexts (i.e., top-down vs. bottom-up) in which the commoning of two private landscapes took place. In so doing, we hope to shed light on how land tenure changes can be supported institutionally and their impact on land uses as well as stakeholder stewardship. Next, we detail the case selection, data collection, and analysis.

## 2. Materials and Methods

### 2.1. Research Context

Hong Kong serves as a prime site to study peri-urban and rural landscape management. In this city, which has long relied on imported goods, rural revitalization has gained growing civic interest over the past decade. Only two percent of the vegetables that Hong Kong people consumed came from local farms in 2022. The total amount of agricultural land has been decreasing from over 8000 ha in 1980 to about 4435 ha as of 2016. Active farmland has been decreasing from just under 4000 ha in 1980 to less than 700 ha as of 2016. Active farmland is mainly located in the rural areas in the New Territories and the urban fringes. The bulk of such land (around 78% in 2016) is owned privately, and a substantial amount of abandoned land is being utilized for storage and/or other industrial uses. Over the years, some agricultural lands have been converted for commercial/residential use. Consequently, there has been a gradual decline in both active and abandoned agricultural land. Farms are generally small, and they produce mainly leafy vegetables, pigs, or poultry. The launching of mega northern development projects in Hong Kong since the mid-1990s called into question the governance of land uses and the conservation measures taken to safeguard the multifunctionality of rural and peri-urban landscapes.

### 2.2. Case Selection

Two landscape cases were selected: a rural revitalization case and an ecovillage case. They were selected for two reasons. First, these two cases had multiple goals, from land cultivation and ecological conservation to cultural revitalization. Second, these two cases demonstrated top-down and bottom-up measures that enabled commoning, which in the context of this study is about sharing land rights with land users (e.g., tenant farmers) and other stakeholders [33,34]. While the former features top-down measures driven by the public sector with a view to gaining the support of the landowners of private lands in

landscapes prioritized for ecological conservation, the latter is characterized by bottom-up measures driven by civil society actors on private lands. Next, we detail data collection and analysis.

### 2.3. Data Collection and Analysis

Information regarding selected cases was collected through desk research and interviews in the latter half of 2023. Relevant reports from news outlets and posts on social media platforms were gathered first. Further interviews were conducted with the managers of various projects (including ecological conservation, land rehabilitation, land cultivation, and cultural revitalization) on selected landscapes, land users (e.g., tenant farmers), and other stakeholders (e.g., volunteers) to gain insights into landscape management. Invitations were sent to interviewees to explain the purpose of the research and intended interview questions about their roles, rights, and responsibilities in landscape management. Consent was sought from the participants to record the interviews. The research team also randomly conducted interviews with volunteers in the field and took notes. These interviews were not recorded. The selection of interviewees was based on a preliminary mapping of positions (e.g., landowners, managers, users) and rightsholders (e.g., land keepers, project managers, tenant farmers, volunteers, and so on). In total, 5 project managers, 2 tenant farmers, and 4 volunteers were interviewed for the rural vitalization case, and 2 focus group interviews were conducted with 4 land keepers and 5 volunteers for the ecovillage case. To ensure the confidentiality of the interviews, no personal identifiable information is included in this paper.

Information collected from desk research and interviews was coded with the following framework (See Table 2), particularly on positions, rightsholders (e.g., individuals, private corporations, voluntary associations, or public agencies), appropriation activities (i.e., the various ways that rightsholders benefited from the resource system), provision activities (i.e., the various ways that rightsholders contribute to resource maintenance and management), and rules. The rules can include, but are not limited to, boundary rules for each position, choice rules (i.e., rules regulating appropriation and provision activities at the operational level), aggregation rules (i.e., group decision-making rules such as consensus-based, majority rule, etc., which could vary from operational situation to operational situation), and rules for higher-level action situations (e.g., the adoption of collaborative governance mode, social norms, etc.).

**Table 2.** Institutional analysis of commoning.

|                                    |   |
|------------------------------------|---|
| <b>1. Boundary rules</b>           | Eligibility criteria can show how rights are shared across positions. For example, citizens can be claimants and participate in resource management when fulfilling certain eligibility criteria.   |
| <b>2. Rightsholders</b>            | They can be interested citizens or organizations. The types of rightsholders for the claimant position can reflect civic participation in resource management.  |
| <b>3. Number of rightsholders</b>  | Number of individuals or organizations occupying the position.  |
| <b>4. Appropriation activities</b> | Various ways that rightsholders benefit from the resource system.   |
| <b>5. Provision activities</b>     | Responsibilities of rightsholders in each position. They range from farm maintenance to nature conservation and to governance.  |
| <b>6. Rules</b>                    | Choice rules (i.e., rules regulating appropriation and provision activities at the operational level), aggregation rules (i.e., group decision-making rules such as consensus-based, majority rule, etc., which could vary from operational situation to operational situation), and rules for higher-level action situations (e.g., the adoption of collaborative governance mode and the principles of cooperatives). |

The abovementioned aspects can show the various ways in which different stakeholders, such as interested citizens, can benefit from and make contributions to the landscape and participate in landscape governance [40]. As such, we gained insights into how commoning can contribute to landscape management practices that enable mixed land uses and community stewardship.

### 3. Results

#### 3.1. Lai Chi Wo (LCW)

Lai Chi Wo is a Hakka village, located within Plover Cove Country Park, and in the northeastern New Territories of Hong Kong (See Figure 1). The history of LCW dates back to 400 years ago, before the Hakka people settled there. The over 300-year-old rural settlement saw its heyday in the 1950s, when nearly a thousand villagers lived in more than 200 houses and terraces among the surrounding hills. In the past, LCW was the center of Hing Chun Yeuk, an alliance of seven villages in Sha Tau Kok, as well as an education and economic hub. Traditional festive celebrations were also held in the village.



Figure 1. Lai Chi Wo location (the red pin).

The head of the village, Mr Tsang, said that the Tsang and Wong families moved in the late Ming Dynasty and were mainly engaged in agriculture. In the 1960s and 1970s, the population of the village expanded, and it was difficult for the limited crop production to support the population expansion. Most of the younger residents moved out for a better living in nearby towns such as Fanling or Tai Po, or emigrated overseas, leaving the village with the older residents only. In the mid-1990s, it almost became an ‘abandoned village’. Luckily, surrounded by country parks and marine parks, the village is relatively well preserved. Enclosed at the front by a gated wall, the village’s traditional Hakka homes are flanked by a dense forested area, called ‘Fung Shui’ woods. Villagers planted the trees in accordance with the feng shui philosophy of living in harmony with nature in hopes that

it would bring them good luck and greater wealth. The restful, crescent-shaped woodland is home to over 100 native plant species (see Figure 2).



**Figure 2.** Lai Chi Wo landscape.

Under the New Nature Conservation Policy (NNCP) announced in 2004, a management agreement (MA) scheme was set up with the support of the Environment and Conservation Fund (ECF) to enable nonprofit organizations (NPOs) to enter into management agreements with landowners for enhancing the conservation of the twelve priority sites for enhanced conservation. Under these agreements, NPOs may provide landowners and/or tenants with financial incentives in exchange for management rights over their land or their cooperation in enhancing the ecological or nature conservation of the priority sites for enhanced conservation, private land in country park enclaves, or in country parks. In June 2011, the ECF Committee supported the extension of the MA scheme to cover country park enclaves as well as private lands within country parks in order to further enhance their conservation. There are currently eight MA projects being carried out at Fung Yuen, Ho Sheung Heung, Ramsar Site, and Deep Bay Wetland outside of Ramsar Site, Sai Wan, LCW, Sha Lo Tung, Mui Tsz Lam, and Kop Tong, which cover around 50 hectares of land and over 600 hectares of fishponds.

The University of Hong Kong (HKU), in collaboration with the Countryside Foundation and with the support of funding from HSBC, launched two rural revitalization projects in LCW: the ‘Sustainable Lai Chi Wo Project’ (2013–2017) and the ‘HSBC Sustainable Rural Area Project’ (2017–present). Farmers and Indigenous residents were invited to join land recultivation. In order to create a new agricultural community in LCW, the ‘3 Dous Community Building Scheme’ was launched in 2015 to incubate agricultural start-ups and production projects at LCW. The HKU team has also worked with building conservation workers and artists to restore village houses, and four of them became cultural exhibition halls.

The MA project in LCW commenced in 2017, led by the Countryside Foundation (partnering with the Conservancy Association) to rehabilitate country park enclaves and enhance their ecological value through collaborations with the local rural communities. The Countryside Foundation has started another MA project (2021–2024) in LCW, which adopts a nature-based solutions (NbS) approach. Through engaging and building capacity in the local community under an NbS framework, it aims to enhance productivity and the ecological potential of revitalized farmland. Specifically, an eco-agriculture model has been adopted. Nature-friendly and regenerative agricultural methods, such as biochar, have been used to achieve a sufficient productivity level that could sustain a viable local economy for the community. Mixed farming and agroforestry techniques have also been employed to create a more diverse, productive, and ecologically enhanced land-use system at LCW. The model relies on a partnership among landowners, farmers, professionals (e.g., agrologists and ecologists), and the project teams. So far, five hectares of farmland have been recultivated, and a variety of products have been planted, such as winter melon, papaya, ginger, turmeric, and radish.

There are 10 farms in LCW. The Countryside Foundation signs all the leases with landowners and then subleases the farms to HKU and farmers. As for the eligibility criteria for farmers, the ones who were allocated farms were those who had volunteered there for at least a year, had gotten to know the village very well, and had become a part of the community. They can write an application for farm allocation. A small amount of funding would be given to these farmers to enable them to maintain the farms and conduct eco-farming. The farmers can keep their produce. Specifically, crop planning was conducted to preserve five precious species, such as butterflies. Every two months, there was a farmers' meeting to discuss farm management and rules concerning the maintenance of infrastructures such as roads, electric fence and irrigation, weeding, preparing for extreme weather situations, organizing farmers' markets, and the like. The Countryside Foundation served as a coordinator. Farmers did not have to pay allotment rental because the Foundation hoped to incentivize these farmers to become new villagers. The number of households in LCW has increased from one household at the beginning of the project to eighteen households at the time of the research, and more than 60 people were actively working and living in the community.

In July 2018, the Countryside Conservation Office (CCO) was established under the Environmental Protection Department to coordinate conservation projects and promote the sustainable development of the remote countryside. The Countryside Conservation Funding Scheme (CCFS) was also established to provide financial support to nonprofit organizations and villagers to organize diverse and innovative conservation activities or projects based on an interactive and cooperative approach, including the MA scheme under the NNCP. Moreover, CCFS also covers the conservation of non-graded built heritage, cultural, and historic assets, etc.

To sum up, this case demonstrated top-down institutional support for commoning—collaborative governance arrangements set up between the government, green groups, and landowners to pursue ecological conservation, land recultivation, and cultural revitalization in the same landscape. Table 3 shows the results of the institutional analysis of the commoning in LCW. The analysis is based on interviews with project managers, tenant farmers, and volunteers working on the farm. The results indicate that the initiatives involved commoning processes as modifications of boundary rules and choice rules. This entailed institutional diversity, which allowed stakeholders with varying land-use interests and capacities to take different positions. For example, those who were only interested in sightseeing and experiencing farming or rural lifestyles were seen as authorized entrants and users who enjoy access and withdrawal rights, while those who were more committed

could apply to be a tenant farmer and participate in farm management, thus becoming claimants. Question 5 shows that individuals holding these different positions were also required to contribute to provision activities at different levels, from just keeping the environment clean to farm maintenance and ecological conservation and to farm management. In other words, commoning could result in institutional diversity, allowing stakeholders to take different positions based on their interests and capacity to contribute to provision activities (i.e., maintenance and conservation). Last but not least, consensus- or majority-based rules were often used at regular farm management meetings, which were crucial to maintaining power balances among rightsholders.

**Table 3.** Lai Chi Wo landscape management.

| LCW   | Authorized Entrant   | Authorized User   | Claimant  | Proprietor   | Owner   |
|---|--|---|---|--|---|
| 1. How can an individual or an organization become a rightsholder of this position?       | Participating in activities organized by project teams; you might be charged a fee | Submitting a proposal to the Countryside Foundation to apply for a plot for organic farming.<br><br><i>Or</i> members of the project teams.<br><br><i>Or</i> becoming a regular volunteer/intern (i.e., having volunteered at LCW for at least a year and having become a part of the local community). | Working as tenant farmers after proposals were accepted by the Countryside Foundation.<br><br><i>Or</i> being members of the HKU project team.<br><br><i>Or</i> being members of the Countryside Foundation project team.       | Entering the management agreement (MA) with the Environment and Conservation Fund (ECF) Committee to perform nature conservation work in collaboration with local villagers.                             | Being landowners/ Indigenous villagers.                                 |
| 2. Who are these rightsholders?   | Interested citizens  | Farmers.<br><br><i>Or</i> members of the project teams.<br><br><i>Or</i> regular citizens who regularly volunteered on the farms.   | One representative from each farm.<br><br>And members of the HKU project team.<br><br>And members of the Countryside Foundation project team.   | The members of the Countryside Foundation project team under the MA.   | Landowners/ Indigenous villagers.                                       |
| 3. How many individuals or organizations are holding this position?                       | Around 100 per month   | 1–4 farmers per farm, a total of 10 farms.  | Around 15.  | Information not available.   | 10 plus.  |
| 4. What benefits can rightsholders of this position draw from the landscape?              | Can enjoy nature and tour around farms   | Can enjoy nature, experience farming, and improve farming practices.<br><br>Volunteers can enjoy farm produce as a gift.  | Can enjoy nature.<br><br>Farmers do not need to pay farm rent.<br><br>And keep all the produce and revenue.<br><br>And use the LCW farmers' market.<br><br>And receive compensation for helping with nature conservation tasks. | Can achieve the mission of nature conservation.  | Can enjoy farm rental income and the outcomes of a revitalized village. |
| 5. What obligations and responsibilities do the rightsholders have towards the landscape? | Keep the environment clean   | Daily farm work.<br><br>And one needs to contribute to farm maintenance (e.g., maintaining the roads and the electric fence, weeding, preparing for typhoons, irrigation, organizing farmers' markets, etc.).<br><br>And nature conservation work.  | Daily farm work, farm maintenance, and nature conservation work.<br><br>And one needs to commit to regular farm management meetings.  | Daily farm work, farm maintenance, and farm management.<br><br>And the countryside foundation needs to pay farm rent.<br><br>And coordinate conservation works according to the MAs with the government. | Participating in regular management meetings.                           |

Table 3. Cont.

| LCW  | Authorized Entrant | Authorized User   | Claimant                              | Proprietor   | Owner  |
|--|--------------------|---|---------------------------------------|--|--|
| 6. Are there any formal or informal rules that rightsholders need to follow? | Country Park rules | Country Park rules.<br><br>Organic farming standards, and do not bring soil or seeds from outside.<br><br>Service agreement on nature conservation works with the Countryside Foundation.<br><br>Operational rules about tool sharing, etc. | Consensus-building and majority rule. | Follow the principles of collaborative governance.<br><br>Follow the management agreement with the government. | Follow the principles of collaborative governance.<br><br>Follow the management agreement with the government. |

### 3.2. Partnership for Eco-Agriculture and Conservation of Earth (PEACE) in Nam Chung

Nam Chung is located in the northeast of the New Territories of Hong Kong, near Luk Keng (See Figure 3). The original residents immigrated here as early as the Qing Dynasty, including the Zheng, Yang, Li, Lin, and Luo clans. Traditional villages and ancestral halls are still preserved. In the early days, the villagers grew rice for their livelihood. Since the 1980s, Hong Kong’s population has increased so much that water sources have been insufficient. When the government built a freshwater lake in Tai Po, the rich water resources of Nam Chung were channeled into the catchment area. The villagers had no choice but to turn the grain fields into fishponds. But they could not compete with the supply from the mainland. Since then, the fishponds have been gradually abandoned, and they are located at the junction of salty and fresh water, thus forming wetlands.

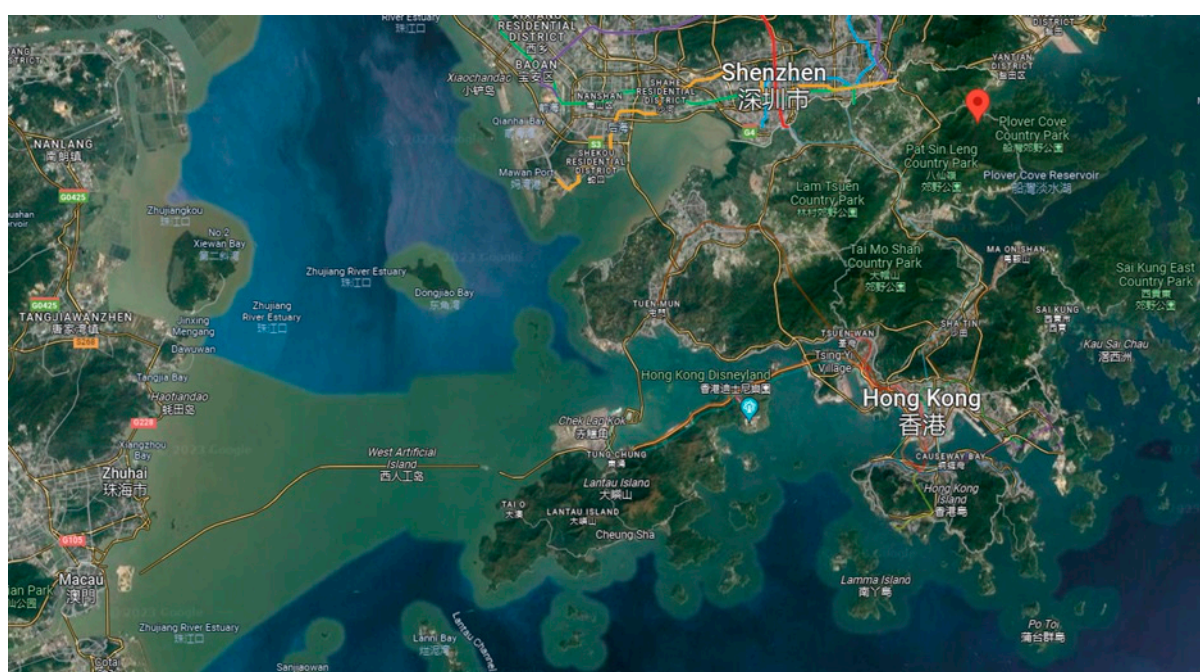


Figure 3. Nam Chung location (the red pin).

In 2005, some farmers began to rent fishpond land from villagers to plant lotus, fruits, and vegetables. Under the symbiosis of fish and lotus, not only were lotus seeds harvested but habitats were also provided for diverse organisms. In autumn, migratory birds from the north fly to Nam Chung to recuperate. The Hong Kong Bird Watching Society regularly tracks bird populations in this region and uses these data for ecological education.

At the beginning of 2010, the Hong Kong Sustainable Agriculture Concern Association (HKSACA) and its members (i.e., organic farmers) in Nam Chung launched the 'Nam Chung Land Keeping Movement', recruiting more than a hundred enthusiastic people to form 'land keepers'. They jointly raised funds to purchase more than 4000 square feet of land from villagers and leased about 800,000 square feet (7.43 ha) of fishpond land for a period of three years to protect the ecological environment of Nam Chung and promote sustainable agricultural production (see Figure 4). This is de facto a community land trust. The goal is to achieve the harmonious coexistence of people and the ecological environment. Fishponds occupy 90% of the 800,000-square-foot land. Except for the lotus and rice that grow in the water, the rest are planted surrounding the fishponds, such as radishes, pumpkins, bananas, ginger, tomatoes, dragon fruits, etc. It is to minimize intervention in the natural environment and coexist with different species.



**Figure 4.** Nam Chung PEACE landscape.

In 2013, with the withdrawal of the HKSACA, the land keepers hoped to continue protecting this land, so they formally established the Partnership for Eco-Agriculture and Conservation of Earth (PEACE) in April of the same year. PEACE employs a holistic approach to sustainability put forward by the Global Ecovillage Network (GEN), which is an eco-community project that works to inspire, educate, and foster ecovillage lifestyles and sustainable living techniques. The members strive to regenerate soil and increase food sovereignty through the practice of sustainable agriculture. Their work involves growing their own food organically, artisanal food making and education, sharing natural building techniques, community history, cultural and ecological tours, and working in partnership with other local projects.

At the time of the research, PEACE was already a registered society, and its work was coordinated by an executive committee. The voluntary executive committee consisted of farmers, university professors, social workers, artists, and other professionals from various fields. The daily farming activities were managed by a resident farmer employed by the association. PEACE also depended on volunteers who assisted with farming and construction work during holidays. Most of the volunteers were young individuals, some

of whom were evaluating the feasibility of sustaining themselves through farming in the long term. In 2015, the association set up an internship program to give those who had this idea to experience the life of a farmer as a lifestyle experiment. The sources of income for PEACE mainly included membership dues from over 40 members, sales of agricultural products, activity fees, and service fees (such as grain harvesting services).

As an ecological education platform in Nam Chung, PEACE also hoped to establish a relationship with the original villagers and revitalize the original village culture. As one of the PEACE members said, ‘the original village culture is very important. Nam Chung has its historical depth, and we can show its new look and its richness.’ PEACE has not carried out any large-scale construction projects except for using abandoned timber to do simple repairs of dilapidated stone houses and used ship containers for activity venues, kitchens, dormitories, storage rooms, and bathrooms. In so doing, PEACE hopes to abide by ecological principles and to design buildings without interfering with ecological processes.

Table 4 details the institutional analysis of the commoning of this landscape. The results indicate that land keepers raised funds to purchase land rights, including exclusion and alienation rights to protect the landscape, and they also modified rules so that management rights could be vested in stakeholders such as young volunteers or interns who had shown a commitment to ecovillage values and practices. For example, to join the management working groups, volunteers or interns must become regulars (e.g., working three times per week) or even move into the ecovillage. Moreover, aggregation rules such as consensus- or majority-based decision-making rules could address power imbalances among different rightsholders.

**Table 4.** Nam Chung PEACE landscape management.

| PEACE   | Authorized Entrant                                   | Authorized User  | Claimant   | Proprietor   | Owner  |
|---|--|--|--|--|--|
| 1. How can an individual or an organization become a rightsholder of this position? | Regular citizens (e.g., hikers, tourists, passersby) | Becoming a volunteer or an intern.<br><br>Joining program activities.<br><br>Becoming a collaborator (e.g., food processors).                | To join the management working groups, volunteers or interns must demonstrate commitment by becoming a regular (e.g., working 3 times per week) or even moving into the ecovillage and actively participating in program activities.<br><br>Or becoming a land keeper. | Staff members could also become core members of the governing body if they are nominated by land keepers.  | Being an original villager or becoming a land keeper.  |
| 2. Who are these rightsholders?   | Regular citizens                                     | Any interested citizens, residents in the neighboring villages, friends, and partners.   | Regular citizens, staff members, and land keepers.   | Staff members and land keepers.  | Original villagers and land keepers.   |
| 3. How many individuals or organizations are holding this position?                 | Can be unlimited                                     | 10–20 volunteers or interns.<br><br>100 program participants.<br><br>3 collaborators.  | Nearly 100 working group members, including 30 plus land keepers, staff members, and interns.  | 15–16 (among these, 7–8 people are board members).   | 30 plus.   |
| 4. What benefits can rightsholders of this position draw from the landscape?        | Can enjoy nature                                     | Can enjoy nature.<br><br>Can enjoy discounts of ecovillage products.<br><br>And can practice ecovillage lifestyle and enjoy personal growth. | Can enjoy nature, farm produce, and discounts on ecovillage products and space (free once a year).<br><br>And can practice ecovillage lifestyle and pursue one’s passion about the ecovillage.   | Can enjoy nature, farm produce, and discounts on ecovillage products and space (free once a year).<br><br>And can practice ecovillage lifestyle and pursue one’s passion about the ecovillage. | Can enjoy nature, farm produce, and discounts on ecovillage products and space (free once a year).<br><br>And can practice ecovillage lifestyle and pursue one’s passion about the ecovillage. |

Table 4. Cont.

| PEACE   | Authorized Entrant         | Authorized User  | Claimant  | Proprietor   | Owner  |
|---|----------------------------|--|---|--|--|
| 5. What obligations and responsibilities do the rightsholders have towards the landscape? | Keep the environment clean | Volunteers or interns need to do volunteer work.<br><br>Program participants need to pay a fee.<br><br>Collaborators exchange resources.   | Volunteers or interns: work 3 days per week and participate in land management through working groups.<br><br>Staff and land keepers: complete farmwork and participate in land management through working groups.  | Carry out governance duties, such as attending working group meetings, raising funds, paying rent, and safeguarding the ecovillage vision. | Safeguard the ecovillage vision.   |
| 6. Are there any formal or informal rules that rightsholders need to follow?              | Country Park rules         | Country Park rules<br><br>Consensus-based and majority rule.<br><br>The core values and principles of an ecovillage.<br><br>And social norms such as not disturbing other villagers. | Decentralization of decision-making (e.g., working groups) and the adoption of a collaborative governance mode that involves volunteers).<br><br>The core values and principles of an ecovillage.<br><br>And social norms such as not disturbing other villagers. | Cooperative rules.<br><br>The core values and principles of an ecovillage.<br><br>And social norms such as not disturbing other villagers. | Cooperative rules.<br><br>The core values and principles of an ecovillage.<br><br>And social norms such as not disturbing other villagers. |

Additionally, just as in the previous case, this case also demonstrated how the design of boundary rules and choice rules can lead to institutional diversity, which enables different levels of participation from stakeholders based on varying land-use interests and levels of commitment to this ecovillage. For example, those who were committed to the cause of the ecovillage movement and showed action (e.g., volunteering regularly and moving into the village) took claimant positions and were given management rights, whereas people with interests only in sightseeing and experiencing rural lifestyles and limited capacity (e.g., occasional volunteering) could take authorized entrant and user positions and have access and some withdrawal rights (e.g., enjoy discounts of farm produce). In a nutshell, not only can commoning enable the participation of stakeholders in landscape management but it is also conducive to institutional diversity, mixed land uses, and varying forms of stewardship activities based on stakeholders' interests and capacity.

#### 4. Discussion

In this paper, we explore commoning as a means to address the sustainability and localization challenges encountered by current ILAs. James Reed and their colleagues expanded on Sayer's principles by introducing mixed land-use strategies and integrating spatial planning tools to identify areas suitable for different land uses in a landscape [10,11,23]. Reed's work highlights the importance of balancing conservation, agriculture, and development within landscapes, rather than treating them as separate sectors [12]. While Reed and his colleagues have proposed robust methods to operationalize ILAs, the sustainability of these methods often hinges on the availability of long-term funding and external experts, which can limit their ability to monitor over extended periods, maintain stakeholder engagement, and implement adaptive co-management. Our study shows that commoning, particularly the modification of boundary rules, choice rules, and aggregation rules, entailed institutional diversity that allowed stakeholders with different land-use interests (e.g., sightseeing and farming) and capacities (e.g., availability and commitment) to take different positions (i.e., entrant, user, claimant, etc.) and addressed power imbalances between stakeholders in farm and land management. In addition, our cases also demonstrated top-down and bottom-up institutional measures—collaborative governance and community land trust—organized by public sector and civil society actors to gain land rights from private landowners and promote ecological conservation. Next, we discuss institutional support

for commoning in detail and the impact of commoning on land tenure changes, mixed land uses, and community stewardship.

#### *4.1. Commoning and Integrated Land Governance*

The two cases demonstrated top-down and bottom-up institutional support for commoning: the collaborative governance arrangement at LCW and the community land trust arrangement at Nam Chung. The former was driven by the public sector, while the latter was led by civil society actors. Specifically, there was a high level of public interest in the ecological conservation of the LCW site as it is located in priority sites (e.g., country parks) for enhanced conservation. To gain the support of the landowners of private lands within country parks, the government set up the collaborative governance arrangement (i.e., management agreement) under the New Nature Conservation Policy to enable non-profit organizations to enter into a management agreement with landowners for enhancing the conservation of the twelve priority sites. In exchange for management rights over private lands and the cooperation among landowners in enhancing conservation, NPOs may provide landowners and/or tenants with financial incentives for them to organize diverse and innovative conservation activities or projects. Hence, one could see a diversity of rural revitalization initiatives on the LCW site, from ecological conservation and land recultivation to cultural and economic revitalization.

Collaborative governance is a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets [52]. In a landscape, there are often multiple jurisdictions and different tenure systems (e.g., public, customary, tribal, private), or sometimes, there is insufficient information to clarify tenure rights [53,54]. As such, landscape sustainability becomes a public good [55], and therefore, it embodies a collective action problem as described by Cole (2008) [56], in which solutions require cooperation among multiple actors who may have differing interests and incentives [1,15,57]. The ILA literature contends that the competing claims of stakeholders require an inclusive approach that considers the importance of synergizing diverse stakeholder interests at multiple scales [12,58]. The LCW case demonstrates how collaborative governance arrangements could be used to promote the commoning of private lands and ensure landscape multifunctionality when private lands are located in landscapes designated for ecological conservation.

Conversely, the ecovillage case illustrates a type of institutional support, specifically through a community land trust, which was established from the grassroots level, driven by civil society actors. Unlike the LCW community, which was characterized by a diversity of sectoral interests, the members of the ecovillage shared the same interest in and were committed to the practices of the ecovillage. The homogeneity among land users in terms of their values was conducive to collective action. Without policy support, civil society actors structured their commoning efforts with a land trust model, thus keeping the land from being exploited for non-sustainable uses. Moreover, they also had a lot more autonomy in organizing appropriation and provision activities according to the ecovillage principles. In a nutshell, it is shown in both cases that institutional support for commoning is important. To shed light on how commoning promoted landscape multifunctionality and land stewardship, we discuss land tenure innovations next.

#### *4.2. Commoning and Land Tenure Intervention*

Our case analysis shows that the design of boundary rules and choice rules entailed institutional diversity, which enabled different levels of participation from stakeholders. This finding supports the argument made by Colding and Barthel (2013) about the necessity

of institutional diversity (e.g., different positions and associated rights and responsibilities), which allows different stakeholders to access and steward shared resources according to their land-use preferences and capacities (e.g., expertise and availability) [43]. In both instances, volunteers who demonstrated higher levels of commitment were designated as claimants and granted management rights and responsibilities. Conversely, those interested merely in sightseeing or experiencing rural lifestyles and farming were regarded as entrants or users. Furthermore, these two groups of stakeholders were permitted and obligated to participate in varying degrees of appropriation and provision activities. This facilitated a mix of land uses and multi-level stewardship, encompassing tasks such as environmental cleanliness, farm management, and nature conservation.

The cases also provided empirical evidence on how commoning can address power imbalance between those such as urban planners, developers, landowners, and those such as tenant farmers, who rely on and care for the land's sustainability. Commoning took place when not only access rights and withdraw rights but also management rights were given to stakeholders such as tenant farmers and volunteers [33,34]. For example, in LCW, the ones who were allocated farms were those who had volunteered there for at least a year, had gotten to know the village very well, and had become a part of the community. They could then write an application for farm allocation. These farmers also received a small amount of funding to conduct eco-farming and ecological conservation work. They also participated in management meetings. Likewise, in the second case, volunteers or interns had to regularly contribute to farmwork and nature conservation work before they could be eligible for the claimant position (having management rights). In both cases, land users could become claimants and have management rights only if they demonstrated their commitment to the landscape and agroecological principles. Moreover, in both cases, land users were encouraged to live near the land so that they could be better stewards of the land. These commoning arrangements encouraged landscape stewardship from the members of the public, particularly among those with a strong interest in rural life [30].

Moreover, we argue that commoning is also crucial to adaptive co-management. Sustainable and adaptive landscape management must be context-specific, localized, and entail in situ experiments that cannot be achieved through top-down measures [24–27]. Participation in the maintenance and co-management of rural or peri-urban landscapes depends on the opportunities provided by a land tenure system. In view of the challenge of having limited rights to self-organize, the cases shed light on the innovations of land tenure systems that enable the vesting of land rights, particularly management rights, in land users. Shepsle (1989) defined an institution to be robust if it was long-lasting and if the operational rules had been modified over time according to a set of collective choice arrangements where stakeholders can participate in modifying operational rules [59]. Participation allows the incorporation of local and Indigenous knowledge into urban planning processes and increases social resilience that is crucial for climate change adaptation [60,61]. People who believe their actions can have an impact and are given the opportunity to take responsibility are more inclined to participate, show stewardship, and be proactive in landscape management. This echoes a critical commons paradigm that espouses a political philosophy grounded in grassroots civic activism. There is no 'standard formula or blueprint, nor is the commons some panacea or utopia'; rather, it is an evolving model of self-provisioning and local stewardship [31]. Thus, commoning can be an effective tool to enhance public participation, community stewardship, and adaptive co-management.

## 5. Conclusions

In this study, we propose that commoning may hold the key to unlocking the potential of landscape approaches, particularly in addressing the localization and sustainability

of methods that promote mixed land uses and adaptive co-management. Landscape approaches are conceptually attractive and offer considerable potential to address socio-economic and environmental trade-offs facing people and nature [12]. Despite much optimistic academic rhetoric, the ability of integrated landscape approaches to effectively address the trade-offs has been questioned due to broad definitions, operational difficulties, sectoral bias, power dynamics, and short-term funding constraints [16–19]. To improve practical implementation, Freeman et al. (2015) operationalized Sayer et al.'s (2013) principles and detailed processes, while Reed expanded on these by integrating spatial planning tools for mixed land-use strategies [9,13,23]. However, the sustainability of these methods often hinges on long-term funding and external experts. Sustainable and adaptive landscape management must be context-specific, localized, and entail in situ experiments, which cannot be achieved through top-down measures [26,27].

This research addresses this gap by proposing commoning as a means to achieving mixed-use development and fostering long-term community stewardship. Commoning is essentially the process of vesting bundles of land rights in resource users (e.g., tenant farmers) and concerned members of the public [33,34]. This research addresses this gap by studying two landscape management cases with a view to gain insights into the institutional support needed to support commoning and the potential of commoning to promote mixed land uses and community stewardship. Both the collaborative governance model and the community land trust model were found to be effective in supporting commoning. The former drove the commoning of private lands through policy interventions, which provided not only institutional frameworks but also financial incentives in exchange for land management rights and land conservation opportunities. The latter demonstrated a bottom-up form of institutional support for commoning driven by civil society actors who shared the same values and commitment to safeguarding the ecological balance of landscapes, thus conducive to collective action and self-governance.

The cases show that commoning, as manifested in land tenure innovations, including boundary rules and choice rules, contributed to institutional diversity, which enabled different levels of participation from stakeholders, driving mixed land uses and multi-level stewardship activities based on their land-use interests (e.g., sightseeing, experiencing farming, nature conservation) and capacities (e.g., availability and expertise). The cases also highlight the importance of aggregation rules (e.g., majority-based or consensus-based decision-making) in addressing power imbalances in farm and land management.

In summary, this study highlighted the potential of commoning as an effective strategy to tackle the sustainability and localization challenges encountered by current integrated landscape approaches in promoting mixed land uses and facilitating adaptive co-management. Moreover, it also shows the importance of institutional measures (e.g., collaborative governance arrangements and community land trust) in supporting commoning. Creating more local arenas for landscape management can engage a broader subset of civil society in climate change adaptation strategies [51]. This study is limited by the use of case study methodology. To further the research on ILAs, we suggest that more research is needed to apply the lens of commoning to the analysis of landscape management experiments, particularly land tenure designs. The experiments could be policy interventions or bottom-up initiatives. Research in this direction would extend the current discussions of ILAs.

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