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An Integrated Landscape–Seascape Approach in the Making: Facilitating Multi-Stakeholder Partnership for Socio-Ecological Revitalisation in Eastern Coastal Taiwan (2016–2021)

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Abstract: Over the past decade, integrated landscape (–seascape) approaches—IL(S)As—have been gaining prominence as holistic, collaborative, and tangible solutions to biodiversity conservation and sustainability challenges. On-the-ground implementation of IL(S)As, however, is a complex task. The Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative), established in October 2016 and facilitated by the authors, is an ILSA aimed at the socio-ecological revitalisation of the Xinshe ridge-to-reef landscape–seascape in eastern coastal Taiwan. The objective of this paper is to summarise and demonstrate our experiences with facilitating the Xinshe Initiative over the five-year period (2016–2021). This is a case study participatory action research based on mixed qualitative methods of data collection and analysis. Research findings reveal the importance of: (1) locally sensitive boundary setting and checking by the means of inclusive and participatory processes; (2) various facilitation tools and engagement strategies for the continuity of multi-stakeholder interest and engagement; (3) five socio-ecological perspectives of the Satoyama Initiative for determining environmental and socio-economic objectives; (4) regular, consistent, and locally sensitive monitoring and evaluation tools for the effectiveness of adaptive co-management; and (5) enabling conditions (relational, knowledge, and political resources) for promoting the Xinshe ILSA-related experiences "from -scape to scale".

Keywords: integrated landscape and seascape approach (ILSA); the Satoyama Initiative; multiple stakeholders; adaptive co-management; resilience; "from -scape to scale"; Taiwan

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1. Introduction

Transitioning to the post-2020 decade has been an opportunity to reassess where we stand in our relationship with nature. From the Planetary Boundaries concept (2009, 2015) [1] to the Global Assessment Report (2019) [2] by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) to the outbreak of COVID-19 pandemic, we have been repeatedly warned about the role of direct and indirect anthropogenic drivers in affecting the "fabric of life" on our planet [3]. Along with the warnings also came the reiteration of global hope for a harmonious co-existence between humans and nature, epitomised in the 2030 Agenda for Sustainable Development [4], post-2020 Global Biodiversity Framework [5], and the United Nations Decade on Ecosystem Restoration (2021–2030) [6].

It is clear that to address the drivers of change and achieve the vision of "living in harmony with nature" [5] we may no longer rely on sectoral, single-objective, project-based actions [7]. Instead, collaborative, integrated, and transformative approaches are needed to embrace the complexity of socio-ecological interactions at various scales [8–10]. Furthermore, achieving tangible sustainability outcomes at a local scale is central to their replicability and upscaling to the national and global levels [11,12].

In recent years, integrated landscape approaches (ILAs) and their synonymous concepts [13,14] have been gaining traction in academic publications, policy reports, webinars, and conferences [15,16] as one of practical yet holistic, local yet scalable means towards biodiversity conservation and human well-being [17,18]. Recent IPBES-IPCC joint report (2021), for instance, highlighted the role of "multifunctional -scapes" in addressing the interactions within the "climate–biodiversity–society" nexus [19]. Several regions (e.g., Japan, The Netherlands, and Taiwan) have incorporated the "-scapes thinking" within their conservation policies [20–22]. The implementation of ILAs is being actively promoted by a number of organisations around the world [23,24]. Among them, the efforts of the International Partnership for the Satoyama Initiative (IPSI) aimed at revitalisation and sustainable use of socio-ecological production landscapes and seascapes (SEPLS) are particularly prominent [25,26].

An ILA is defined by Reed et al. (2016) as "a multifaceted integrated strategy that aims to bring together multiple stakeholders from multiple sources to provide solutions" to multiple objectives at a landscape scale [27]. The "multi-" emphasis of an ILA—multiple functions, actors, objectives, and management strategies [18,28]—is balanced out by its "uni-" focus on concrete spatial and temporal scales [29,30]. It ensures one of the main strengths of ILAs—achieving concrete and observable outcomes within a reasonable period of time [30–32].

Nevertheless, despite their growing popularity and apparent advantages, operationalisation of ILAs can be a challenging endeavour. In 2021, the World Bank Group conducted an extensive review of over 150 integrated land-use case studies around the world and determined a number of themes that are commonly critical and problematic to most ILAs [13]. They included: setting of boundaries by the means of collaborative and iterative processes; bridging of interests, objectives and mindsets of multiple stakeholders and consistency of their engagement; place-sensitive identification of environmental and socio-economic objectives; monitoring and evaluation for effective adaptive management; and scaling up of single case study experiences to other areas. These themes are echoed in a number of other studies [14,15,17,29], while finding workable ways to address them is deemed critical to the overall effectiveness of ILAs [33].

Since October 2016 to date, our research team from the National Dong Hwa University (NDHU, the authors) has been acting as a facilitator of the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative) in the Xinshe Village, Fengbin Township, Hualien County, Taiwan. We define the Xinshe Initiative as an integrated landscape–seascape approach (ILSA), which in its essence is similar to an ILA but places an equal emphasis on the "ocean" component and the landscape–seascape connectivity. Over the years, the Initiative's efforts have gradually come into domestic and global spotlight [12,13,22]. Notably, the image of the Xinshe SEPLS has been selected for the home page of IPSI official website [34].

In our earlier publications, we have shared the experiences related to specific stages of the Xinshe Initiative. They looked at its initial planning stage and establishment of the multi-stakeholder platform (MSP) (2016–2017) [35], and at community-based resilience assessment workshops (RAWs) conducted for the monitoring and evaluation purposes (2017–2018, 2020) [36–38]. We are mindful of existing theory–practice gaps identified in the literature [33], one of which is a lack of comprehensive analysis of a long-term and ongoing IL(S)A from a facilitator's point of view. In other words: how does an IL(S)A get made? Thus, the objective of this paper is to comprehensively summarise and demonstrate our first-hand experiences with facilitating the Xinshe Initiative over the five-year period (2016–2021). The discussion of our findings is based on the five pertinent themes [13–15,17,29]: boundary setting, multi-stakeholder engagement, environmental and socio-economic focus, monitoring and evaluation, and going "from -scape to scale".

We hope that the lessons presented in this article will be beneficial to the Indigenous peoples and local communities, research teams, NGOs, and government agencies engaged in practical implementation of IL(S)As in their respective localities, to researchers working

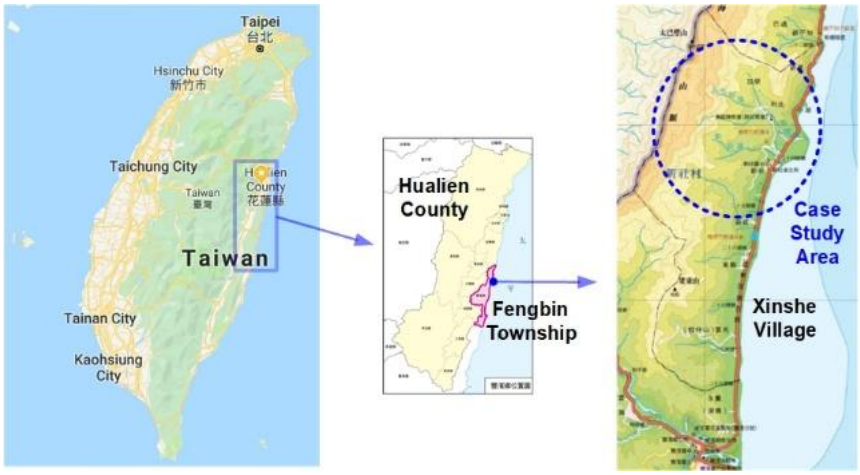
on theoretical conceptualisation of IL(S)As, and to multi-level policy-makers who consider integration of IL(S)As in their decision-making.

Lastly, as a limitation of this work and a disclaimer on our part, we acknowledge the complexity of the landscape–seascape phenomenon and many existing ways to study it. The Xinshe Initiative and the Xinshe SEPLS entail a wide array of research topics and engagement opportunities for all walks of science (e.g., landscape ecologists, environmental engineers, agricultural economists, soil scientists, anthropologists, Indigenous studies experts, and others). Our expertise is in participatory approaches to landscape–seascape management, facilitation of MSPs, and community-based monitoring and evaluation. This is the perspective from which we analyse the Xinshe Initiative.

2. Materials and Methods

2.1. The Case Study Area: The Xinshe Socio-Ecological Production Landscape and Seascape (SEPLS)

The Xinshe SEPLS is situated in the Xinshe Village, Fengbin Township, Hualien County and covers the area of approximately 600 hectares (23°39′20.8″ N 121°32′21.8″ E) (Figure 1a). It is a ridge-to-reef landscape and seascape typical of eastern coastal Taiwan (Figure 1b) located within the watershed of the Jialang River—from the river source in protected forest of the Coastal Mountain Range, through production farmlands of two Indigenous settlements (Amis Fuxing tribe, 70 residents, and Kavalan Xinshe tribe, 350 residents) [39] and to the Pacific Ocean (Figure 1c).



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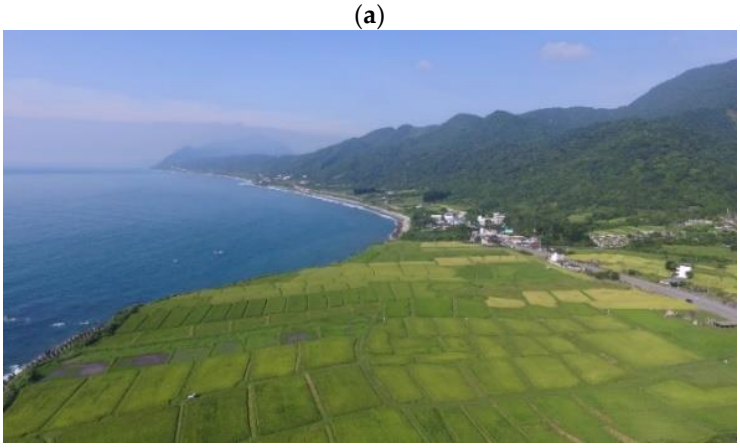

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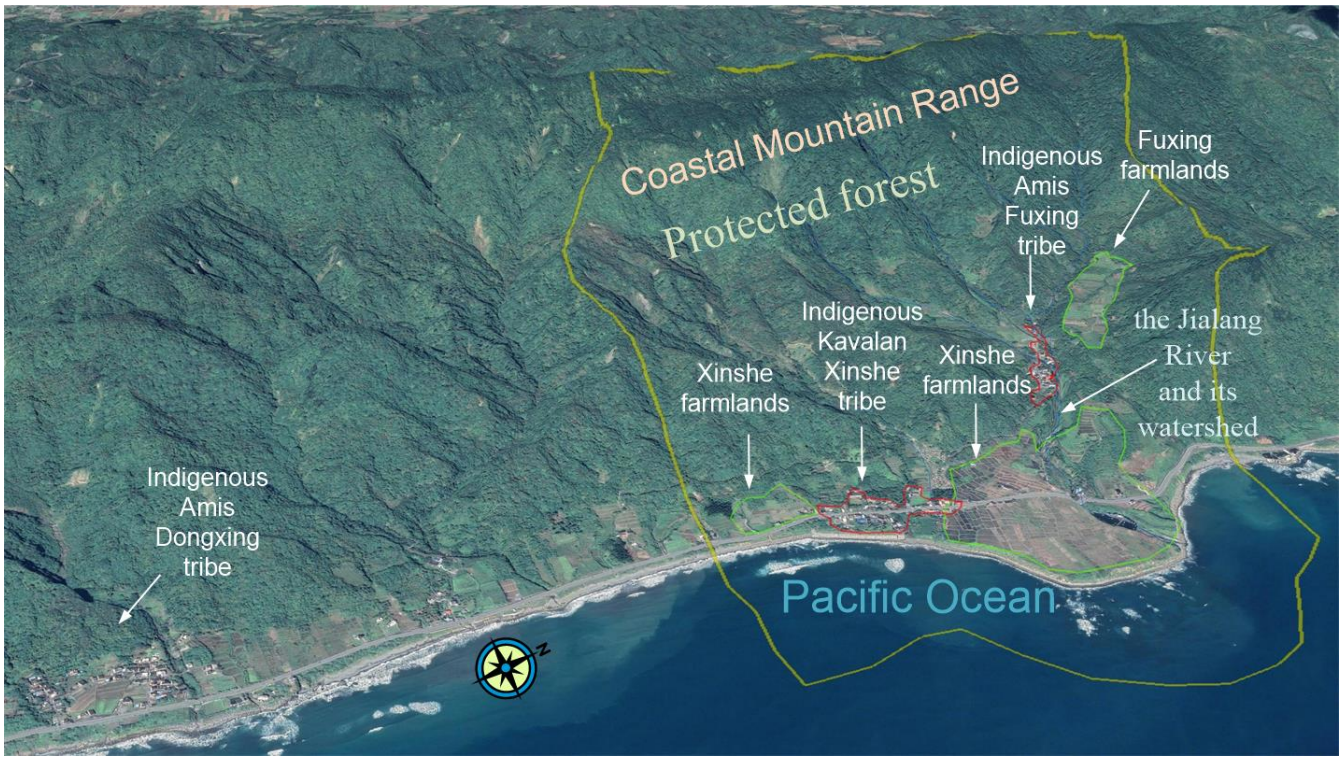

(**c**)

Figure 1. The Xinshe SEPLS, Xinshe Village, Fengbin Township, Hualien County, Taiwan: (**a**) geographic location; (**b**) landscape–seascape panoramic view; and (**c**) boundary (yellow line) and land and ocean-use map. (Map source (**a**,**c**): map data ©2019 Google; Photo source (**b**): the authors' own).

The main land- and ocean-use in the Xinshe SEPLS is deeply rooted in traditional ecological knowledge (TEK), seasonal rituals and socio-cultural characteristics of the Amis and Kavalan tribes. Its traditional satoyama-satoumi activities include rice-paddy and dry crops farming, gardening, gathering of wild plants, agro-forestry, seasonal hunting and fishing, handicrafts, and culinary art [35]. Since 2010s, however, as a result of Taiwan's rapid urbanisation and industrialisation of late 20th century, the Xinshe SEPLS has been facing challenges common to many other rural areas around the island: population decline, aging, loss of local TEK, prevalence of conventional agriculture, deterioration of natural resources, and lack of income-generating opportunities [37,40]. These socio-ecological threats became the main prerequisite for the introduction of the Xinshe Initiative.

2.2. Rationale for the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative)

The Xinshe Initiative as an ILSA aimed at socio-ecological revitalisation of the Xinshe SEPLS was established in October 2016. It was born from the initial proposal by NDHU (our team) and Hualien District Agricultural Research and Extension Station (HDARES), and collaborative negotiation processes with the Fuxing and Xinshe communities, and Hualien regional branches of the Forestry Bureau (HFDOFB) and Soil and Water Conservation Bureau (HBSWC). The Xinshe ILSA was intended to unite already existing sectoral project-based efforts of the government stakeholders (HDARES in the area since 2014, HFDOFB since 2010, and HBSWC since 2011)—all subordinate to the Council of Agriculture and address local challenges in an integrated and holistic way [35].

From the beginning, eco-agriculture and the Satoyama Initiative have been deemed as the conceptual pillars of the Xinshe Initiative. As an "integrated approach to agriculture, conservation and rural livelihoods" [41] in the Xinshe SEPLS, eco-agriculture fully aligns with the Satoyama Initiative's vision of mutually beneficial human–nature relationships

attainable through the sustainable use of biodiversity [25]. Over the years, both of these concepts have played an imperative role in determining the multi-stakeholder engagement, and environmental and socio-economic objectives of the Xinshe Initiative (as discussed in Sections 3.2 and 3.3).

The projected duration of the Xinshe Initiative is ten years—from 2016 to 2026—divided into short-term, transition, and mid-term phases (Figure 2). A decade is anticipated as a sufficient length of time for the Fuxing and Xinshe elders to observe tangible revitalisation outcomes in the area and for the local youth to return home and succeed the long-term management of the Xinshe SEPLS. To date, there is no designated external funding mechanism for operationalising the Xinshe Initiative. Its financial and technical support is primarily based on the compilation and allocation of resources from relevant government projects.

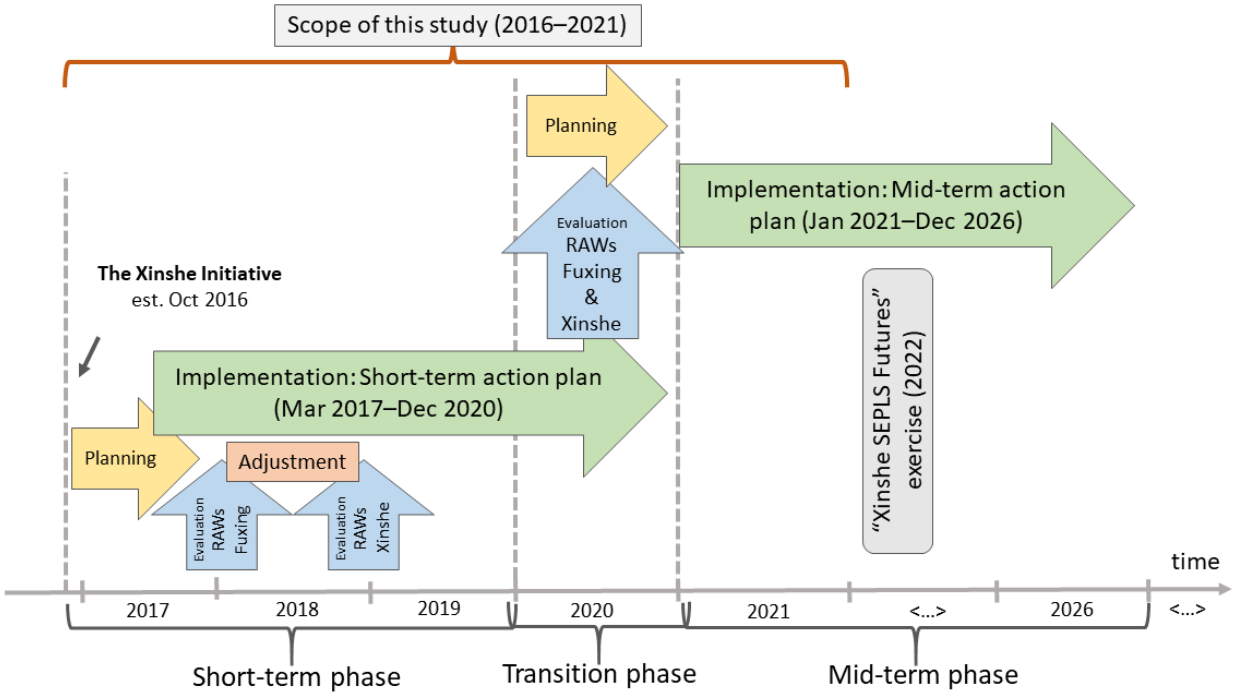

Figure 2. Timeline of the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative): short-term, transition, and mid-term phases and planning–implementation–evaluation–adjustment stages of its adaptive co-management (ACM) cycle. Abbreviations: RAWs—community-based resilience assessment workshops, and SEPLS—socio-ecological production landscapes and seascapes.

2.3. Methods of Data Collection and Analysis

The scope of this study covers the short-term, transition and (partially) mid-term phases of the Xinshe Initiative—from October 2016 to December 2021 (Figure 2). As the facilitators, we have employed a variety of mixed qualitative methods of data collection and analysis suitable for a case study participatory action research of this kind [42,43]. These methods have been based on the needs of the adaptive co-management (ACM) cycle (planning, implementation, evaluation, and adjustment stages) [44] and included group discussions, interviews, on-site visits, participant observation, and desktop data collection and analysis. In Table 1, we provide a summary of methods in relation to each phase and stage of the Xinshe Initiative (Figure 2) and reference our relevant publications for more detailed information. Triangulation of data and methods, member checks, and peer support were employed during the entire scope of this study to minimize the risk of validity threats [45].

Table 1. A summary of data collection and analysis methods used for facilitation of the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative) over the 2016–2021 period.

Phases of the Xinshe Initiative (Years)	Stages of the ACM Cycle of the Xinshe Initiative (Years)	Activities within Relevant Phases/Stages	Methods of Data Collection and Analysis (Number of Relevant Activities)	Relevant Publications by the Authors
Short-term phase (Oct 2016–Dec 2019)	Planning (short-term AP) (Oct 2016–Mar 2017)	Core and extended MSP meetings, preparatory meetings	Group discussions and participant observation (30+ MSP and preparatory meetings), on-site visits (50+ times) Desktop analysis and transcription of written reports and audio–video recordings, thematic and narrative analysis, peer discussion	[35]
	Implementation (short-term AP) (Apr 2017–Dec 2019)			
	Evaluation and Adjustment (Oct–Dec 2017, Jun–Oct 2018)	RAWs for evaluation and adjustment of the short-term AP	Group discussions (9 RAWs and 2 post-RAWs summary workshops), on-site visits (11 times) Desktop analysis and transcription of written reports and audio–video recordings, thematic and narrative analysis of 2017–2018 RAWs results, peer discussion	[36]
Transition phase (Jan–Dec 2020)	Implementation (short-term AP) (Jan–Dec 2020)	Core and extended MSP meetings, preparatory meetings	Group discussions and participant observation (8 MSP and preparatory meetings) Desktop analysis and transcription of written reports and audio–video recordings, thematic and narrative analysis, peer discussion	[37,38]
	Evaluation and Planning (mid-term AP) (Jan–Dec 2020)	RAWs for evaluation of the short-term AP and planning for the mid-term AP	Group discussions (10 RAWs, 2 post-RAWs summary workshops, 2 workshops with the government agencies, 1 joint MSP workshop), semi-structured interviews (14 times), on-site visits (30+ times) Desktop analysis and transcription of written reports and audio-video recordings, thematic and narrative analysis of 2020 RAWs results, peer discussion	
Mid-term phase (Jan–Dec 2021)	Implementation (mid-term AP) (Jan–Dec 2021)	Core and extended MSP meetings, preparatory meetings	Group discussions and participant observation (6 MSP and preparatory meetings, including 2 online meetings on Google Meet platform), on-site visits (10+ times) Desktop analysis and transcription of written reports and audio–video recordings, thematic and narrative analysis, peer discussion	

Abbreviations: ACM—adaptive co-management, AP—action plan, MSP—multi-stakeholder platform, RAWs—community-based resilience assessment workshops, HDARES—Hualien District Agricultural Research and Extension Station, HFDOFB—Hualien Forest District Office of the Forestry Bureau, HBSWC—Hualien Branch of the Soil and Water Conservation Bureau, and EBAFA—Eastern Region Branch of Agriculture and Food Agency.

3. Results and Discussion

In this section, we comprehensively summarise and discuss our experiences with facilitating the Xinshe Initiative over the five-year period (2016–2021) in relation to the five key themes outlined in the literature [13–15,17,29]. Thus, the following sub-sections look at the boundary setting (Section 3.1), multi-stakeholder engagement (Section 3.2), environmental and socio-economic focus (Section 3.3), monitoring and evaluation for ACM (Section 3.4), and scaling up of the Xinshe Initiative (Section 3.5) (Figure 3). For each theme, we first explain its contents and role within an IL(S)A, then we describe how we approached it in the Xinshe case, and, lastly, we elicit the lessons learned, including the factors of success, challenges, and opportunities. In Table A1, we present a concise summary of this discussion.

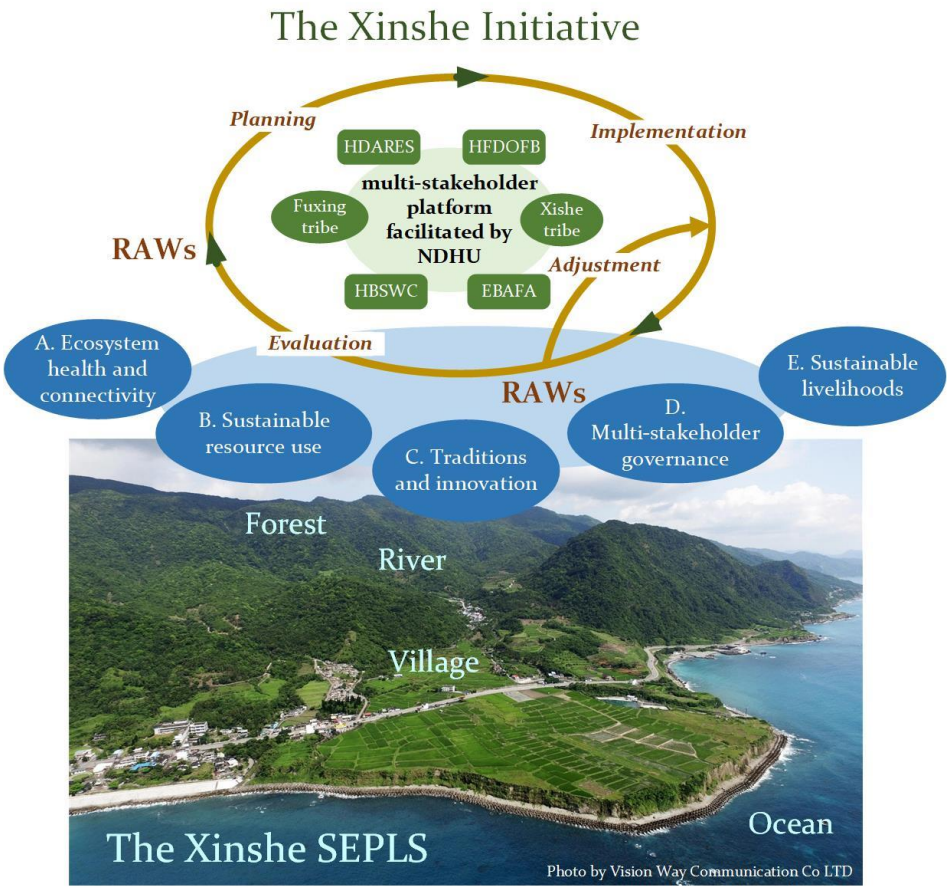

Figure 3. The conceptual framework for operationalising the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative) in the Xinshe socio-ecological production landscape and seascape (the Xinshe SEPLS). (Photo source: Vision Way Communication Co., Ltd., Taichung, Taiwan). Abbreviations: HDARES—Hualien District Agricultural Research and Extension Station; HFDOFB—Hualien Forest District Office of the Forestry Bureau; HBSWC—Hualien Branch of Soil and Water Conservation Bureau; EBAFA—Eastern Region Branch of Agriculture and Food Agency; NDHU—National Dong Hwa University; and RAWs—community-based resilience assessment workshops.

3.1. Boundary Setting: "Forest–River–Village–Ocean" Connectivity of the Xinshe SEPLS

One of the primary considerations when setting up an IL(S)A is the definition of its boundaries, which means determining the geographic area to be managed by it [13,17]. Though a seemingly simple task, boundary setting does require certain conditions to be met in order to ensure the effectiveness of the arrangement. As outlined in the World Bank Group's report (2021), one of such conditions is the selection of the most suitable boundary

types (jurisdictional, ecological, and socio-cultural) by the means of collaborative processes with the inclusion of all relevant stakeholders [13]. Another important aspect is that the geographic area should be "large enough" for the objectives of an IL(S)A to be comprehensively addressed yet "small enough" for the area to be effectively managed [13,15,18].

During the early planning stage of the Xinshe Initiative (October 2016–March 2017) (Figure 2), the MSP members collectively decided that 600 ha (see Section 2.1) would be an appropriate area size for addressing the intended objectives. At the time, boundary setting was principally based on the ecological rationale: the boundaries had to cover the territory of the entire watershed of the Jialang River as well as account for all relevant ecosystems within the Xinshe SEPLS (Figure 1c). The Jialang River is a relatively short (approximately 6 km) independent stream typical of the geomorphology of eastern coastal Taiwan [46]. Despite its modest size, the river is cherished by the locals for the quality and abundance of its biotic and abiotic resources [46]. It is the main source of clean and mineral-rich drinking and irrigation water for the Fuxing and Xinshe communities as well as the main habitat for the spawning migration of 21 varieties of endemic shrimp unique to this part of the island [37]. There are four ecosystem types present in the watershed—forest, in-land-water, agricultural, and coastal. Support to their multiple functions and connectivity is central to maintaining the integrity of ecosystem services provided by the Jialang River. Therefore, initial ecological boundary setting had to account for the "forest–river–village–ocean" vertical connectivity of the Xinshe SEPLS (Figure 3).

The jurisdictional boundary for the Xinshe Initiative aligns with the ecological one and covers the administrative territories of the Fuxing and Xinshe tribes, both located with the Xinshe Village, Fengbin Township, Hualien County. By design, this was done to ensure the convenience of timely and direct communication of the Xinshe Initiative's objectives and action tasks to the relevant local authorities such as the village head and Fengbin Township Office. In addition, the jurisdictional boundary setting took into consideration the territorial mandates, sectoral expertise and pre-Initiative project implementation sites of the three government agencies, which had been previously engaged in the area on a sectoral basis (HDARES, HFDOFB, and HBSWC) (see Section 2.2).

The third type of boundary setting—socio-cultural—is based on the territories of traditional satoyama-satoumi resource use and relevant cultural practices of the Amis Fuxing and Kavalan Xinshe communities. They include, among others, cultivation of Indigenous crop varieties in Amis home gardens, gathering of edible and medicinal plants in the forest, collection of shells and seaweed in the intertidal zone, and traditional fishing in the coastal waters [46]. Traditional resource use is also closely linked to local harvest and ocean festivals (the Xinshe community), and culinary art and handicrafts (e.g., Amis rattan weaving and Kavalan banana leaf weaving).

Over five years of the Xinshe Initiative, we have observed both successes and drawbacks with our choice of boundary setting. In general, as intended, the area size of 600 ha did prove to be "large enough" yet "small enough" [13,15,18] for effectively operationalising the Xinshe Initiative. It allowed us to maintain a holistic perspective on the whole watershed of the Jialang River and its four ecosystem types. Having started with the "village" element (e.g., revitalisation of fallow farmlands in 2016–2017) we gradually extended our focus to the "forest" (e.g., agro-forestry in 2017–2018) and "ocean" (e.g., coral reef checks in 2019–2021) elements of the Xinshe SEPLS. The Jialang River has been the primary—"river"—element fostering the landscape–seascape connectivity within the designated boundaries.

Despite being generally successful, our boundary setting, however, did result in some challenges. One of such drawbacks is leaving out the third community—Dongxing tribe, which is located within the jurisdictional boundaries of the Xinshe Village but outside of the Jialang River watershed (Figure 1c). Moreover, despite its Indigenous Amis socio-cultural background, the Dongxing community has less frequent relational and socio-economic ties with the Fuxing and Xinshe tribes, which only exacerbated its alienation. As a result, its socio-ecological conditions and development over the years have been visibly lagging

behind. This challenge is an important reminder as well as an opportunity as we work on scaling up of the Xinshe Initiative (see Section 3.5).

Another challenge is related to the complexity of cross-tribal (internal) boundary setting between the Fuxing and Xinshe communities, where their traditional Indigenous territories often overlap or remain undefined. Local perception of the socio-cultural boundaries is based on the history of the two tribes and frequently differs in Amis and Kavalan narratives [35]. If not properly addressed, this sensitive issue may result in potential resource use disputes (e.g., hunting territories in the forest, in-land water use for drinking and irrigation purposes, or fishing in the ocean) and related complications for decision-making processes.

Wrapping up the discussion of the boundary setting theme, we must point out a key lesson learned relevant to the iterative nature of this task [13,17]. Our experience has shown that timely and participatory *boundary checking* is just as important as the initial boundary setting. Performed at regular MSP meetings, boundary checking may be seen as a participatory and inclusive process that helps to ensure that an ILSA's boundaries place a timely emphasis on both the local needs and the ecosystem elements and their functions. Boundary checking further reiterates the importance of collaborative approaches and multi-stakeholder participation [47,48], which are discussed in the next section.

3.2. Multi-Stakeholder Engagement: Multi-Stakeholder Platform Facilitated by NDHU

Though extensively addressed in many case studies and related publications, multi-stakeholder engagement remains one of the greatest challenges of all IL(S)As [18,31]. Bürgi et al. (2017) note that engaging multiple stakeholders with varying values, objectives and knowledge types tends to be very demanding in terms of stakeholder involvement, collaboration, time allocation, and information sharing, which may negatively impact consistency of stakeholder interest and longevity of an IL(S)A arrangement [33]. Cross-sectoral co-operation may be another constraint where stakeholders join from various, often competing, sectors [13,15]. MSP is central to the multi-stakeholder engagement as "an institutional co-ordination mechanism that enables discussions, negotiations, and joint planning between stakeholders from various sectors in a given landscape" [48].

Composition of multiple stakeholders is unique to each IL(S)A and should be done in a way that best reflects its objectives [9]. Over the years, the composition of multiple stakeholders for the Xinshe Initiative has been based on the need to appropriately address the socio-economic and environmental challenges faced by the Xinshe SEPLS. In order to ensure a locally beneficial and community-based approach, the Fuxing and Xinshe communities have always been the core local members of the MSP. Involvement of the core government stakeholders initially adhered to the eco-agricultural focus of the Xinshe Initiative and the emphasis on its three pillars: agricultural production (sectoral expertise of HDARES), biodiversity conservation (HFDOFB), and rural livelihoods (HBSWC) [35]. The fourth government agency—Eastern Region Branch of Agriculture and Food Agency (EBAFA)—joined the MSP in 2018 to enhance the marketing pillar of the Initiative. This way the composition of all six core members of the MSP was formed (Figure 3).

Extended participation of other relevant stakeholders is also encouraged by the Xinshe Initiative. Thus, over the years, it has included Fengbin Township Office, Xinshe Primary School, NGOs, research teams, private ecological consultant companies, and other interested individuals. Inclusion of these actors often has been determined by the need to accomplish specific action tasks such as, for example, ecological surveys and biodiversity monitoring performed by Hualien Natural Education and Ecology Consultant Ltd. (Hualien, Taiwan) or place-based curriculum developed by Xinshe Primary School.

The roles and responsibilities of core and extended stakeholders are stipulated in the Operational Mechanism for the Xinshe Initiative—an official code of conduct agreed upon by all MSP members. It outlines the leading and supporting roles of all multiple stakeholders based on their area of expertise. Furthermore, the document provides for the mechanism of core (quarterly: February, May, August, and November) and extended

(bi-annual: June and December) MSP meetings with the inclusion of relevant members (core and extended, respectively). The venues for the MSP meetings and conveners' roles are rotated among the core stakeholders. In between the MSP meetings there is a regular and instant communication (via LINE messaging app and phone calls) focused on completion of the action tasks or addressing urgent matters.

As the facilitators of the MSP for the Xinshe Initiative, we draw on some key lessons learned from this experience in relation to the stakeholder composition, co-operation processes and our use of engagement techniques.

Firstly, keeping the MSP arrangement as locally sensitive and locally beneficial as possible has been central to maintaining the interest of local communities and adhering to their needs and capacities [10]. For this reason, for example, the convener's role for the MSP meetings, originally assigned to the four government agencies on a rotational basis (2016–2019), was handed over to the two communities in 2020. It was done at the time when the Fuxing and Xinshe tribes had had enough familiarity with the MSP process and confidence to take the lead. Notably, the government agencies have maintained their technical (printing, transportation, equipment, snacks, etc.) and capacity-building (assistance with preparation of MSP meetings agendas) support throughout the process. This type of local sensitivity is key to promoting the long-term bottom-up governance in the Xinshe SEPLS [47,49].

Secondly, we learned that engagement of non-local stakeholders (both core and extended) should adhere to the "observe and involve" principle. It is reasonable to avoid involving too many and too diverse stakeholders in the beginning of an ILSA in order to avoid management complications and effectively move from planning to implementation stages [48]. Moreover, it is helpful to start with those non-local stakeholders who have the experience of prior involvement in the area (e.g., HDARES, HFDOFB, and HBSWC), while inclusion of new stakeholders should be theme- and time-sensitive when the need arises (e.g., engagement of EBAFA in 2018). This notion is also relevant to local non-core stakeholders, such as the local government. For instance, throughout 2016–2019, Fengbin Township Office maintained an "observer's status" within the Xinshe Initiative and became more actively engaged only in 2020 by offering its venue for the MSP meetings.

Thirdly, we note that cross-sectoral coordination between the government agencies, undoubtedly one of the most difficult parts of any IL(S)A [12,18,28], can be effectively addressed in several ways. It helps, for example, when the core government stakeholders are subordinate to the same supervising body (e.g., Council of Agriculture) and have a mutually trusting relationship based on positive partnership experiences (e.g., have previously jointly worked on the same project). Furthermore, alignment of sectoral areas of expertise with the overarching goal of the Xinshe ILSA (eco-agricultural revitalisation of the area) and establishment of connectivity between cross-sectoral efforts has been essential for building meaningful and lasting partnerships [9,18,31].

In the Xinshe case in particular, a *cross-boundary* co-operation between the two tribes showed to be just as important as the cross-sectoral co-ordination between the government agencies. As discussed in Section 3.1, the Fuxing and Xinshe communities demonstrate a substantial socio-cultural complexity and may not be treated as a homogenous entity. Each tribe has its own internal decision-making mechanisms (e.g., tribal council in the Xinshe tribe and weekly inter-generational lunches in the Fuxing tribe) and it takes time for the two communities to develop a tribe-to-tribe communication mechanism. Over 2016–2021, the capacity and readiness for a cross-boundary dialogue (e.g., co-management of drinking an irrigation water supply of the Jialang River) has gradually become more prominent.

The main challenge that we have faced throughout the operationalisation process is common to the one shared in the literature—keeping stakeholder interest and continuity of multi-stakeholder engagement [18,33]. As the short-term phase of the Initiative was nearing its end (2020), for instance, some of the government agencies, being accustomed to sectoral project-based ways of thinking, expressed their intention "to move on" by explaining that three to four years of on-the-ground engagement in one area had been enough. Hence,

at times like this, we sensed the need to strengthen our facilitation efforts and search for engagement opportunities.

Through this experience, we learned that one of the main ways to keep the government agencies engaged (and to enhance the cross-sectoral co-operation) is to gather support from a higher rank supervising body. This way, in 2017, 2018 and 2021 we invited the Minister and Deputy Minister of the Council of Agriculture to visit the Xinshe SEPLS and learn first-hand about the efforts made by the Xinshe Initiative. Though a rather strategic and instrumental solution, it did help to point out the value of the Initiative, its place within Taiwan's agricultural, conservation, and rural development policies, and, most importantly, rekindled the interest of the four government agencies. In addition, it enhanced a sense of local pride and belonging among the Fuxing and Xinshe community members.

Development of various engagement strategies and facilitation tools in response to newly emerging issues and specific needs of the ACM has been another facilitation approach to the stakeholder challenge. As an illustration of this, in Section 3.4 we discuss the adoption of community-based RAWs as a monitoring and evaluation tool for the Xinshe Initiative, and in Section 3.5—implementation of the "Xinshe SEPLS Futures" workshops (Figure 2). Here we note that 2020 RAWs were also our answer to the above-mentioned "time to move on" challenge. Conducted from May to September 2020, the workshops, on the one hand, fostered an in-depth and extended community engagement, and, on the other hand, demonstrated to the government agencies that the short-term phase of the Initiative was "just the beginning" and there were many more tasks to work on in the mid-term period [37,38].

We sum up our MSP facilitation experiences by highlighting the fact that addressing the stakeholder challenge offers an invaluable *communication* opportunity. As rightly pointed out by Kusters et al. (2018) and Bürgi et al. (2017), keeping the actors informed about the purpose, goals, and expected outcomes of an IL(S)A and timely reminding them of a shared vision is key to a lasting, meaningful, and inclusive multi-stakeholder engagement [33,48]. We further observe that communication should be accomplished in the language (terms and values) best understood by the stakeholders: e.g., key performance indicators—for the government agencies, and tangible improvements to local environment and livelihoods—for the local communities.

3.3. Environmental and Socio-Economic Focus: Five Socio-Ecological Perspectives of the Satoyama Initiative

For an IL(S)A operationalised within the boundaries of a complex socio-ecological system such as SEPL(S), it is imperative to ensure that its action plan comprehensively addresses a wide variety of environmental and socio-economic objectives [26,27,50]. They need to be time- and place-sensitive to maintain a high degree of relevance to local realities as well as properly understood by all multiple stakeholders to guarantee the effectiveness of an IL(S)A as a whole [47]. We summarise these qualities as the need for comprehensiveness, relevance and comprehensibility of environmental and socio-economic foci within an IL(S)A [38,51].

There are several questions to keep in mind. How to develop the most appropriate set of objectives and action tasks suitable for addressing environmental and socio-economic challenges in the area? How to determine priority interventions and identify the main issues at the early planning stage of an IL(S)A and throughout its implementation process? Below we share some of our answers.

By October 2016, we had had a positive experience with adoption of the five socio-ecological perspectives of the Satoyama Initiative [25] for an ILA management in another SEPL (no seascape component) in eastern Taiwan—Fengnan Village, Fuli Township, Hualien County [52,53]. It gave us confidence to try this approach for the Xinshe SEPLS as well. Thus, we determined the five perspectives as five thematic building blocks of the action plan for the Xinshe Initiative (Figure 3). They included (A) ecosystem health and connectivity, (B) sustainable resource use, (C) traditions and innovation, (D) multi-

stakeholder governance, and (E) sustainable livelihoods. Detailed action tasks were added within each thematic block to formulate 40 specific objectives within the short-term action plan (2016–2020): A1–A13, B1–B5, C1–C7, D1–D5, and E1–E10 (Table A2).

The environmental focus of the Xinshe Initiative was reflected in perspectives (A) ecosystem health and connectivity and (B) sustainable resource use. These thematic blocks of the action plan looked, among others, at such action tasks as enhancement of crop and landscape diversity (A1–A2), removal of alien species (A5), inventory and monitoring of agro-, terrestrial and marine biodiversity (A7–A9), revitalisation of fallow farmlands (B1), promotion of agro-forestry (B3), and development of composting technologies (B5).

Perspectives (C) traditions and innovation and (D) multi-stakeholder governance emphasised the socio-cultural focus of the Xinshe Initiative. Documentation and transfer of TEK (C1, C6–C7), promotion of local arts and crafts (C5), development of place-based environmental education (C3–C4), capacity-building, social capital, and leadership skills of the local communities (D2), co-management of common resources (D3–D4), and land tenure dialogue (D5) were some of the objectives addressed by these two perspectives.

Perspective (E) sustainable local livelihoods covered two main dimensions—safety and income-generating opportunities (economic focus). The safety aspect included such action tasks as disaster risk prevention and response (E1), stable supply of drinking and irrigation water (E2), and improvement of local infrastructure (E3–E5). The income-associated dimension encompassed food processing and marketing skills and channels (E7), green labelling schemes (E6), and eco-(marine, agri-food) tourism (E8–E9).

Our experience with implementation of the short-term action plan for the Xinshe Initiative has proved the suitability of the five perspectives to comprehensively, aptly, and comprehensibly reflect local environmental and socio-economic objectives. The perspectives have holistically looked at the "forest–river–village–ocean" elements, their functions and connectivity within the socio-ecological system of the Xinshe SEPLS. They also allowed "to break into chewable pieces" the complexity of local issues [50] in a way understandable to both local and non-local, core, and extended stakeholders [38].

Furthermore, the place-based relevance of the five perspectives has been observed in community-based thematic adjustments of the action tasks. This way, for example, promotion of environmentally friendly de-weeding practices (A13) and development of composting technologies (B5) were added in 2018 following the communities' demands for advancing their eco-agricultural practices. Similarly, food processing and marketing (E7) objectives were also included in 2018 when the local communities' post-production needs became more prominent. The necessity of an enhanced emphasis on the "ocean" element (e.g., monitoring of marine biodiversity, and development of marine tourism) and landscape–seascape connectivity was voiced by the locals during the 2020 RAWs (see Sections 3.2 and 3.4) and thus incorporated into the mid-term action plan (2021–2026).

In addition, the five perspectives and 40 action tasks have helped to create a clear division of responsibilities between the multiple stakeholders based on their experience and sectoral expertise (see Section 3.2). Curiously, an in-depth implementation of specific action tasks resulted in inclusion of new stakeholders who deliberately became strong supporters of the Xinshe Initiative and partners of the local communities. The distinctive examples of this phenomenon are Taiwan Good Food Association (for the B5, C4, and E7 action tasks), and Hualien Natural Education and Ecology Consultant Ltd. (Hualien, Taiwan) (A8–A9, and B4) invited by HFDOFB, and Global Human Resource Consulting Co., Ltd. (Taipei, Taiwan) (C2) commissioned by HBSWC.

Lastly, over the five-year period, we have noticed the emergence of environmental and socio-economic synergies among the five perspectives and their relevant action tasks. Inventory and monitoring of terrestrial (including agro-) and marine biodiversity (A7–A9), for instance, have contributed to promotion of sustainable resource use (e.g., cultivation of crop varieties suitable for production wetlands, B1), development of place-based curriculum by Xinshe Primary School (C4) and inclusion of ecological data in local resource use maps, leaflets, and documentaries (C6). In addition, this combination of biodiversity-

related expert knowledge and TEK has benefitted local livelihoods by becoming a part of community-based interpretation activities, eco-(marine, agri-food) tourism (E8–E9).

The main challenge, however, is that along with the above successful developments and growing synergies, some trade-offs have started to show as well. One of such examples is the increasing numbers of crop-raiding wildlife (wild boars and Taiwanese macaques) (A4) resulting from successful revitalisation of fallow farmlands and agro-forestry advances of the Fuxing tribe (B1, B2). Another trade-off is growing property prices and outsiders' interest in purchasing land in the area (D5) as a result of improving environmental and socio-economic conditions and increasing regional and Taiwan-wide recognition of the Xinshe SEPLS [37].

As a dynamic and complex system, the Xinshe SEPLS displays a never ceasing and at all times co-existing combination of environmental, socio-cultural and economic topics. Staying sensitive to the synergies and trade-offs dynamics between these potentially conflicting objectives offers an opportunity for adaptive management solutions [54,55]. In the next section, we describe the role of community-based RAWs in enabling this process.

3.4. Monitoring and Evaluation for Adaptive Co-Management

By definition, ACM is one of the main process-based principles of any IL(S)A [14,29]. Its adaptive nature emphasises the time-tested dynamics [49,55] and ability to respond to fluxes and uncertainties through learning from past experiences (experiential learning) and exploring of new alternatives (experimental learning) [56,57]. Its collaborative (co-) feature points out that all stages of the management process (planning–implementation–evaluation–adjustment) and all types of learning are the product of joint efforts of multiple stakeholders engaged in an IL(S)A [9,44,47].

Monitoring and evaluation are key to the overall success of any IL(S)A management arrangement. They can identify the need for priority interventions, provide adjustments to an existing action plan, or foster development of a new action plan [32]. Their main purpose is to ensure that the ACM stays on track in a place- and time-sensitive manner. The choice of efficient tools for tracking progress, conducting evaluation in the most participatory and collaborative way, and doing so on a regular and consistent basis, however, are among the main factors that make the monitoring and evaluation especially challenging [13,15,32].

For tracking progress of the Xinshe Initiative, we adopted the concept of resilience to place a particular emphasis on a dynamic balance between the socio-ecological risks and resources of the Xinshe SEPLS at a given point in time [37,58]. It helped the two communities to assess "how well the Xinshe Initiative was doing" based on their own perceptions of local threats (risks) and capacities to deal with them (resources). This resilience-focused approach allowed monitoring and evaluation to be more than a mere collection of socio-ecological facts about the area. On the contrary, it holistically assessed the complexity of socio-ecological dynamics reflected in local expectations and collective actions [10].

Community-based RAWs, defined as a series of community-based activities (5–6 workshops) aimed at evaluation of socio-ecological resilience for the purpose of providing a problem-oriented feedback to the adjustment or planning stages of the ACM [35–38], were chosen as the main monitoring and evaluation tool for the Xinshe Initiative (Figures 2 and 3). The contents of RAWs were built on the five perspectives of the Satoyama Initiative (see Section 3.3) and 20 localised indicators of resilience modified from their original version [59] to better fit the place-based specifics of the Xinshe SEPLS. Over the five-year period, RAWs were carried out twice in both Fuxing and Xinshe communities: in 2017–2018 for the evaluation and adjustment of action tasks within the short-term action plan (2016–2020) [36], and in 2020 for the evaluation and planning for the mid-term action plan (2021–2026) [37,38] (Figure 2). For a more detailed information on each series of RAWs, please refer to our earlier publications (Table 1).

We indicate that one of the main successes of RAWs as a monitoring and evaluation tool has been their community-based and locally sensitive nature. Both in 2017–2018 and 2020, they were carried out with a wide representation from various age groups,

professional and personal backgrounds, place-based knowledge, and local TEK, while all RAWs participants had a chance to openly express their points of view, discuss the most urgent matters and management interventions [36,37].

Secondly, our experience with RAWs has demonstrated that monitoring and evaluation can be done in a regular, timely, and consistent manner to best adhere to the needs of the ACM cycle. Conducting RAWs once in two to three years has proved to be a reasonable enough frequency to, on the one hand, keep a timely track of local issues and, on the other hand, allow for a sufficient implementation time. As pointed out by Nishi et al. (2021), periodical resilience assessments are imperative to enhancing the ACM and mobilising resources for building resilience in SEPLS [54]. In addition, operating with the five perspectives and 20 indicators of resilience during each series of RAWs stimulated consistency, continuity, and easy comprehension of the approach.

Thirdly, our experience has taught us the possibility of a successful integration of the evaluation outcomes (RAWs results) within the ACM cycle. As a community-based vision of the main priorities and needs for the Xinshe SEPLS, RAWs ensured place- and time-sensitive revisions to the management process: in 2017–2018, in the form of adjustment and addition of concrete action tasks to the short-term action plan, and in 2020 by development of a new bottom-up mid-term action plan (Figure 2, also see Section 3.3).

Last but not least, we have learned that communication and discussion of monitoring and evaluation results in a participatory and collaborative manner among all multiple stakeholders has been central to the credibility and transparency of the Initiative's efforts [55,56]. As RAWs in principle are a community-based activity performed with a limited number of participants (up to 20 people), it has been critical to communicate their results to a wider Xinshe SEPLS community, government agencies and other non-local stakeholders interested in the Initiative. It has not only ensured the legitimacy of RAWs findings and their effective inclusion within the ACM cycle, but has also attracted some valuable external feedbacks and stimulated experiential and experimental learning across the MSP [56,57].

In conclusion, we outline some drawbacks as well as the opportunities for future betterment of our approach to monitoring and evaluation. One of such challenges is that RAWs, despite their highly appraised participatory and community-based nature, are a subjective and qualitative assessment, grounded in place-based knowledge and local TEK. It leaves room for additional inputs to be made by quantitative expert knowledge-based assessments on the state of biodiversity and ecosystem services in the Xinshe SEPLS [13,24]. The combination of both methodologies may offer an invaluable opportunity to holistically understand the overall performance of the Xinshe landscape–seascape as a result of the Initiative's efforts [16].

Another challenge to be addressed in the future is the reliance of monitoring and evaluation on its current facilitators—our team. To date, it is us who determine the timing of RAWs (to better align them with the needs of the ACM), conduct RAWs (by itself a time and effort-consuming process), analyse the results of RAWs, and help to "digest" them into the action plan. Finding ways to build the monitoring and evaluation capacities of the local communities with the appropriate support from other stakeholders is imperative as we move forward. It is also highly relevant to the scaling up of the Xinshe Initiative that is discussed in the next section.

3.5. "From -Scape to Scale": Scaling up of the Xinshe Experiences

Despite the fact that every landscape (-seascape) presents a unique combination of socio-ecological characteristics and that the experiences of one IL(S)A may not be directly replicated from one area to another [13], the lessons learned from a single case study certainly can serve as a "recipe book" for other areas to "cook" their own management approaches. With the distinctiveness of each SEPL(S) duly noted, we may not forget the similarity of numerous conservation and sustainability challenges faced across localities [2,3,7]. Moreover, a single SEPL(S) does not exist autonomously (however self-sufficient it might

be), it is rather an open system, a part of a larger local, regional, and national network of landscapes and seascapes [12].

The above explains why the scaling up of IL(S)As is such an important task. Internally speaking, it can help to ensure the longevity and progressive development of a single IL(S)A by keeping it open to new knowledge and avoiding the overconcentration of resources. Externally speaking, it can foster connectivity of IL(S)A-related experiences across systems and contribute to the achievement of global targets [4–6]. As outlined in the World Bank report (2021), however, scaling up of local land-use initiatives is a challenging endeavour [13]. It requires finding the right means by which it can be achieved. In this section, we share our current efforts relevant to the extension of the Xinshe Initiative "from -scape to scale" locally, regionally, island-wide, and globally (Figure 4).

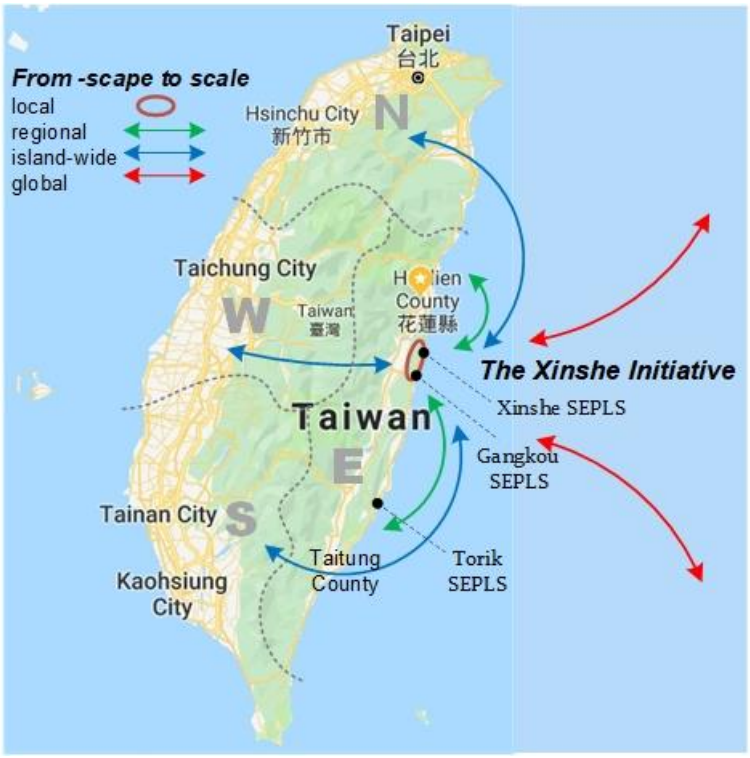

Figure 4. The Xinshe Initiative "from -scape to scale" (Original map source: map data ©2021 Google). The N, W, S, and E letters on the map represent northern, western, southern, and eastern regions of the Taiwan Partnership for the Satoyama Initiative (TPSI).

At the local level of the Fengbin Township (dark red circle in Figure 4), the Xinshe Initiative has already become a source of local pride and sense of place, and a topic of community-based interpretation activities [60]. To foster the longevity of the Initiative's outcomes, however, it is imperative that the local people can envision their future past the Initiative's "due date"—post-2026—and possess the right capacities for a long-term bottom-up governance [49]. As one of the ways to guide the Fuxing and Xinshe communities in this direction, we are currently implementing a series of the "Xinshe SEPLS Futures" workshops (Figure 2) (learning from Pereira et al. (2020) [61]). This activity is aimed at encouraging the locals to contemplate their desired futures in five years (at the end of the Initiative) and 20–30 years (a distant future) from now, and the types of incremental and transformative changes that are required to get there.

Over 2016–2021, the Xinshe Initiative has attracted attention of the Fengbin Township Office (see Section 3.2) and stimulated the promptness of its response to local issues. At the same time we have realised that over-concentration of resources in the Xinshe SEPLS might result in severe trade-offs, one of which is a potential neglect of the other four villages

within the Fengbin Township (Jici, Fengbin, Gangkou, and Jingpu). Therefore, starting from 2021 and supported by HFDOFB, we began a gradual extension of the Xinshe experiences to the Indigenous Amis Gangkou Village (Gangkou SEPLS) located south of Xinshe (Figure 4). We have already completed a RAWs-based issue identification exercise in the Gangkou SEPLS and are currently at the planning stage of its ACM. Importantly, despite learning from the Xinshe Initiative, the Gangkou ILSA is being carried out ("cooked") at its own pace with respect to local needs and specifics.

At the regional level of eastern coastal Taiwan (Hualien and Taitung Counties), the Xinshe lessons are being taken up by the district offices of the Forestry Bureau (HFDOFB and TFDOFB, respectively) to stimulate the connectivity of SEPLS along the Pacific coastline (green arrows in Figure 4). Though each unique in their own way, eastern coastal SEPLS do share a wide array of similar challenges that need to be addressed from a regional perspective: landscape–seascape connectivity, drinking and irrigation water shortage (due to climate impacts), population decline, remoteness and lack of marketing channels and skills, and others [62]. Hence, in 2021, TFDOFB also performed a series of baseline RAWs in the Torik tribe (Chenggong Township, Taitung County) (Figure 4). These common experiences create an opportunity for the Xinshe, Gangkou, and Torik SEPLS to act as the initial SEPLS–to–SEPLS connectivity points for Taiwan's east coast.

Island-wide, the Xinshe experience is being promoted across the Taiwan Partnership for the Satoyama Initiative (TPSI)—a network of satoyama-satoumi practitioners working on revitalisation of SEPL(S) (no seascape in some areas) in northern (TPSI-N), western (TPSI-W), southern (TPSI-S), and eastern (TPSI-E) parts of the island [40,63,64] (blue arrows in Figure 4). In 2021, with support from the Satoyama Development Mechanism (SDM) and the Forestry Bureau, baseline RAWs were carried out in eight SEPL(S) across Taiwan (Gangkou and Torik SEPLS within the TPSI-E region) [65]. Despite their distinctive sets of socio-economic characteristics, all case study SEPL(S) have been learning from the Xinshe Initiative ("recipe book") and making their locally sensitive adjustments.

Finally, we have been sharing the experiences from the Xinshe SEPLS "-scape" to the global "scale" across IPSI's global network of satoyama-satoumi partners [34], at PANORAMA "Solutions for a Healthy Planet" Platform [66] and through a number of other publications and events, including the webinar series of the BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) of the World Bank Group [13] (red arrows in Figure 4). Importantly, the knowledge obtained from other IL(S)As locally, regionally, island-wide, and globally has also been an essential part of our "from -scape to scale" learning process, which is why we illustrate it with double arrows in Figure 4.

As the work on scaling up of the Xinshe Initiative has just begun and is actively advancing, the main lessons are yet to be learned. Our observations to this moment have pointed out some key means—relational, intellectual, and political resources [67]—required to enable this process.

Acquiring relational resources (social capital) would mean finding like-minded partners willing to work together to establish collaborative networks for ecological and human-to-human connectivity of IL(S)As. The TPSI network offers this invaluable opportunity [63]. Attainment and allocation of knowledge resources (intellectual capital) should encourage learning on a SEPL(S)–to–SEPL(S) basis and finding timely and relevant themes to deepen and extend the focus of IL(S)As (e.g., climate–biodiversity–society nexus [19]). Finally, securing political capital (mobilisation capacity) stands for the availability of legal and financial support within the frameworks of agricultural, conservation, and development policies (e.g., Taiwan Ecological Network [22]). The presence of appropriate legal frameworks is also central to establishing landscape-(seascape) arrangements [12].

4. Conclusions

In this paper, we have comprehensively summarised and demonstrated our first-hand experiences with facilitating the Xinshe Initiative—an ongoing ILSA in eastern coastal

Taiwan—over the five-year period (2016–2021). The main take-away messages in their relation to the five main themes discussed in this work are as follows:

- *Setting of ecological, jurisdictional and/ or socio-cultural boundaries* of an IL(S)A should be locally sensitive and achieved by the means of iterative and collaborative processes, while boundary checking with the engagement of multiple stakeholders is equally important for timely management adjustments;
- *Multi-stakeholder partnership, cross-sectoral and cross-boundary co-operation* are best attained through the "observe and involve" principle, where the stakeholder interest and willingness to engage is closely monitored and stimulated by the means of various facilitation tools and engagement strategies;
- Five socio-ecological perspectives of the Satoyama Initiative and 20 indicators of resilience in SEPLS are highly recommended to other IL(S)A practitioners who are looking for a suitable "starter pack" for *environmental and socio-economic issue identification* and *monitoring and evaluation* purposes. These tools may be further adapted in accordance with the place-based characteristics and ACM needs of a concrete IL(S)A;
- *Monitoring and evaluation for ACM* needs to be regular, consistent, locally sensitive, and participatory in nature, while the combination of TEK and expert knowledge, qualitative and quantitative methodologies from social and natural sciences is most desirable. Communication of monitoring and evaluation results to all relevant stakeholders is key to the transparency and credibility of an IL(S)A; and
- Extending an IL(S)A "*from -scape to scale*" implies both sharing of its own experiences and learning from other case studies locally, regionally, island-wide, and globally. The combination of relational, knowledge and political resources is likely to create an enabling environment for the success of upscaling processes.

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Appendix A

Table A1. A summary of operationalising the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative) based on the five key themes relevant to integrated landscape-(seascape) approaches (IL(S)As).

Key Themes Relevant to IL(S)As	Contents of the Key Themes as Described in the Literature *	How Did We Approach It?	What Did We Learn?
Boundary setting	Defines the geographic area managed by an IL(S)A Jurisdictional, ecological and socio-cultural boundary types Collaborative, iterative, inclusive process "Large enough" yet "small enough"	*Ecological*: watershed of the Jialang River; forest, in-land water, agricultural and coastal ecosystems *Jurisdictional*: administrative territories of Amis Fuxing and Kavalan Xinshe tribes, Xinshe Village, Fengbin Township, Hualien County *Socio-cultural*: external boundary of traditional Indigenous territories of Amis Fuxing and Kavalan Xinshe tribes	*Successes*: appropriate and manageable area size; holistic vision and emphasis on ecosystem elements and landscape–seascape connectivity *Challenges*: exclusion of Amis Dongxing tribe located within the jurisdictional but outside of the ecological boundaries; complexity of internal Amis and Kavalan socio-cultural boundaries and potential resource use disputes *Opportunities*: collaborative, iterative and timely boundary checking throughout ILSA
Multi-stakeholder engagement	Initial and in-process engagement of multiple (cross-sectoral) stakeholders Common challenges: continuity, collaboration, time allocation, and information sharing MSP composition and process—unique to each IL(S)A	*Core MSP members*: Amis Fuxing and Kavalan Xinshe tribes (local communities); HDARES, HFDOFB, HBSWC, and EBAFA (government agencies subordinate to the COA) *Extended MSP members*: Fengbin Township Office, Xinshe Primary School, NGOs, research teams, and private ecological consultant companies *Operational Mechanism*: division of roles and responsibilities, core and extended MSP meetings	*Successes*: aimed at long-term bottom-up governance; based on "observe and involve" principle; enhanced cross-sectoral and cross-boundary co-operation *Challenge*: continuity of stakeholder interest → use of appropriate facilitation tools and engagement techniques *Opportunities*: regular communication of purpose, goals and expected outcomes; growing capacities and leadership skills of the local communities
Environmental and socio-economic focus	Multiple and often contested objectives of a complex socio-ecological system Comprehensive, relevant and comprehensible qualities Issue identification throughout all ACM stages	*Key tool*: five socio-ecological perspectives of the Satoyama Initiative and 40 action tasks: ecosystem health and connectivity (A1–A13), sustainable resource use (B1–B5), traditions and innovation (C1–C7), multi-stakeholder governance (D1–D5), and sustainable livelihoods (E1–E10)	*Successes*: the suitability of the five perspectives to reflect local environmental and socio-economic objectives; based on MSP areas of expertise; community-based and timely thematic adjustments; emergence of environmental and socio-economic synergies *Challenge*: emergence of environmental and socio-economic trade-offs *Opportunities*: taking advantage of synergies and trade-offs; deepening thematic focus and new thematic linkages
Monitoring and evaluation for ACM	ACM: dynamic and collaborative process Monitoring and evaluation tools for tracking IL(S)A effectiveness Learning: experiential and experimental	*Key concept*: resilience as a dynamic balance between the socio-ecological risks and resources *Key tool*: community-based RAWs (2017–2018 and 2020), based on five socio-ecological perspectives of the Satoyama Initiative and 20 localised indicators of resilience	*Successes*: community-based, locally sensitive, TEK-minded; regular, timely and consistent; successful integration within the ACM; communication and discussion of RAWs results for credibility and transparency *Challenges/Opportunities*: subjective and qualitative assessment → need for inclusion of quantitative, expert knowledge-based methodologies from social and natural sciences; reliance on facilitators → need for building relevant capacities of the local communities
"From -scape to scale"	A single IL(S)A as a "recipe book" for other IL(S)As Upscaling for internal (input of new knowledge, longevity of an IL(S)A) and external (SEPL(S)-to-SEPL(S) connectivity and contribution to global conservation and development goals) benefits	Local scale: "Xinshe SEPLS Futures" workshops; experience sharing across the Fengbin Township Regional scale: SEPLS–to–SEPLS connectivity along the Pacific coast Island-wide scale: TPSI-wide implementation of RAWs in eight SEPL(S) Global scale: sharing with and learning from partners (IPSI, PANORAMA, and World Bank Group)	*Opportunities*: relational resources: like-minded partners and collaborative networks for ecological and human–to–human connectivity (e.g., TPSI); knowledge resources: SEPLS–to–SEPLS learning, deepening and extending of thematic foci (e.g., climate–biodiversity–society nexus); political resources: legal and financial support within Taiwan's agricultural, conservation, and development policies (e.g., Taiwan Ecological Network)

* Reviewed literature relevant to each of the key themes (also listed in Sections 3.1–3.5): [9,12–15,17,18,26–29,31–33,38,44,47–50,55–57]. Abbreviations: IL(S)A—integrated landscape-(seascape) approach; SEPL(S)—socio-ecological production landscape and (seascape); MSP—multi-stakeholder platform; ACM—adaptive co-management; RAWs—resilience assessment workshops; HDARES—Hualien District Agricultural Research and Extension Station; HFDOFB—Hualien Forest District Office of the Forestry Bureau; HBSWC—Hualien Branch of Soil and Water Conservation Bureau; EBAFA—Eastern Region Branch of Agriculture and Food Agency; COA—Council of Agriculture; NDHU—National Dong Hwa University; IPSI—International Partnership for the Satoyama Initiative; and TPSI—Taiwan Partnership for the Satoyama Initiative.

Table A2. Five socio-ecological perspectives and 40 action tasks of the short-term action plan of the Xinshe "Forest–River–Village–Ocean" Eco-Agriculture Initiative (the Xinshe Initiative).

Five Socio-Ecological Perspectives of the Xinshe Initiative	Action Task(s) of the Short-Term Action Plan of the Xinshe Initiative (2016–2020)	
Perspective A: Ecosystem health and connectivity	A1	Promoting environmentally friendly farming and increasing crop diversity
	A2	Enhancing landscape diversity in rice paddies by planting grass carpets on ridges, slopes, and surrounding hedges
	A3	Reconnecting natural stream to irrigation ditches and ponds by the means of ecological engineering
	A4	Managing farmland-wildlife conflict (wild boars, Formosan macaques, wild hare, barking deer etc.)
	A5	Removing alien species
	A6	Preventing tree-poaching activities, conducting afforestation and restoration of degraded land, preventing unsustainable fishing practices in the Jialang River
	A7	Inventory and monitoring of agro-biodiversity in rice paddy fields
	A8	Conducting inventory and monitoring of terrestrial biodiversity
	A9	Conducting inventory and monitoring of marine biodiversity, encouraging sustainable use of marine resources
	A10	Monitoring slopes and preventing landslides
	A11	Monitoring coastal erosion and carrying out disaster risk reduction projects, implementing ecologically sound coastal engineering
	A12	Assessing resilience in the Xinshe SEPLS
	A13	Promoting environmentally friendly de-weeding practices (no herbicide, and establishment of local de-weeding teams)
Perspective B: Sustainable resource use	B1	Revitalising fallow lands, planting traditional and eco-friendly crops
	B2	Encouraging home gardening, gathering of Indigenous edible plants and use of diversified food sources
	B3	Collecting and using forest products, promoting mixed agroforestry (forest economy, and local arts and crafts)
	B4	Ensuring sustainable use of freshwater and marine resources
	B5	Combining modern and traditional composting technologies
Perspective C: Traditions and innovation	C1	Setting up a database for local plant and crop varieties (Indigenous, Chinese, and scientific names, use, etc.)
	C2	Promoting environmental education activities (including summer and winter youth training camps) for transfer of traditional ecological knowledge (TEK) and skills
	C3	Encouraging Indigenous food and agricultural education
	C4	Working with Xinshe Primary School to promote place-based curriculum
	C5	Promoting Indigenous wild edible plants, food art, weaving, and other crafts
	C6	Making community resources maps, leaflets/booklets, books, videos on traditional culture and ecological knowledge
	C7	Conducting research activities on TEK and sustainable use of local resources (agriculture, forestry and fishery)
Perspective D: Multi-stakeholder governance	D1	Conducting task force and multi-stakeholder platform (MSP) meetings, increasing representation of local people to the MSP
	D2	Strengthening local social capital (cohesion and leadership) and capacity (planning and action)
	D3	Building up tribe-to-tribe and tribe-to-government adaptive co-management of common resources
	D4	Promoting community-based management of protected forest (including forest patrol, sustainable use of wild species and prevention of alien species)
	D5	Building consensus on guarding ancestral properties and sale of land
Perspective E: Sustainable local livelihoods	E1	Applying ecological engineering to disaster risk reduction and climate change adaptation (slope erosion/flood/landslide/typhoon), enhancing tsunami disaster prevention and response
	E2	Maintaining quality/quantity of drinking and irrigation water
	E3	Applying ecological engineering for terraced fields, irrigation ditches and agricultural roads
	E4	Greening the environment and improving local facilities
	E5	Advancing community elderly care, medical and transportation services
	E6	Promoting green labelling schemes to add value to environmentally friendly products
	E7	Upgrading agricultural processing equipment and enhancing local marketing skills (including online marketing)
	E8	Promoting eco-(marine, agri-food) tourism and native art
	E9	Promoting local produce (combined with the place-based curriculum of Xinshe Primary School)
	E10	Promoting place-based landscape art

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