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The Potential of Social Innovation in Rural Revitalisation: a comparative case study from Taiwan

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Summary

Many rural areas in the world have been suffering severe socio-demographic challenges. These problems are explicit characteristics of marginalisation caused by a large scale of socio-economic and political inequality leading to a vicious circle of decline. Recently, social innovations have been frequently discussed in the context of rural development and even viewed as a key toward rural revitalisation, promising to cope with such societal challenges. However, to what extent and how social innovation can contribute to rural development, especially under the future challenge of rural decline, still remains an ongoing concern.

This research aims to explore the potential of social innovation in rural revitalisation by clarifying the actors' roles in social innovation processes. In particular, the study made use of four cases of rural development practice in Taiwan, including two community-driven and two external support-driven cases. The special attention of these case studies draws on the four objectives, which are: (1) to explore the role of actors in community-driven social innovation; (2) to clarify the role of actors in external support-driven rural social innovation; (3) to provide recommendations for integrating the concept of social innovation into rural development policies and programmes; (4) to further theoretical and methodological insights for the study of rural social innovation.

The research builds upon the model of social innovation adapted from Neumeier (2012). In addition, the two analytical frameworks, Actor-network theory (ANT) and Actor-oriented approach based framework, namely, the place-based joint learning framework, were applied comparably to disentangle the actors' roles in rural social innovation. Furthermore, the study is qualitative research that used desk reviews and in-depth interviews with 42 interviewees for data collection. For the data analysis, all interviews were recorded and transcribed into word documents and analysed by mixed coding methods organised in NVivo software.

The research illustrated the findings through actor-network and actor-oriented perspectives and discussed each actor's role in fuelling social innovation. The study concludes that the internal actors may not aim to innovate society — they intend to solve practical local issues. Therefore, the outcomes of social innovation can be unintentional; tangible and material outcomes are crucial for internal actors, which may challenge the literature's perspective that treats material outcomes as supplementary results. Furthermore, external actors could play a key role as helpers in fuelling social innovation only if they get sufficient support from rural areas and the public sector, resulting in their growth while facing upcoming challenges.

The study also discussed the pros, cons, and differences between community-driven and external support-driven approaches. These two approaches—are like two sides of the same coin—while the former is more local-oriented in terms of local targeted problems and local

joint actors, the latter is rather issue-oriented that can focus on the targeted problems and the joint actors without geographical boundaries. In addition, the external support-driven approach conducted by this research to a certain degree reflects the "nexogenous approach." From the empirical experiences of this study, this approach might not guarantee the success of rural social innovation—however, it did provide a bright chance for the public sector to participate not only as a partner or sponsor in rural areas but they can actively be as a bridge to link potential partners somewhere beyond geographical boundaries.

Hence, in terms of integrating social innovation into rural development policies and programmes, three strategies are provided for the public sector, encompassing: (1) the public sector should actively play a bridging role to provide opportunities for connecting external actors; (2) the public sector could use programmes, such as village competitions or other innovative activities, to provide a reachable share vision for people to participate; (3) rural development related programmes should draw more attentions om educational and learning types of programmes to develop self-learning mechanism in local communities. For theoretical and methodological insights, the ANT can be better used to explore research with inequality consideration and without initial social explanation assumptions. The actor-oriented approach may be suitably used to study interactions among clear differentiation of social actors with initial social explanation assumptions.

From the findings of this case study, it can be concluded that social innovation in terms of rural revitalisation is valuable in its outcomes, uncertain in its emergence, challenged by the marginalising rural reality, and promising on external connections without geographical boundaries. Since the future of rural marginalisation is considered inevitable, to survive in its effects is essential. In other words, rural social innovation may not be able to eliminate the causes of rural marginalisation; however, it provides an approach to adapt its effects, that is, to weave a future that rural areas might not have many inhabitants—however, they have more self-organisation—initiators, actors, more external partners and connections are driven by needs to solve common societal problems—without geographical boundaries.

Zusammenfassung

Viele ländliche Gebiete in der Welt sind durch soziodemografische Herausforderungen gekennzeichnet. Diese Probleme sind eindeutige Merkmale der Marginalisierung, die durch ein hohes Maß an sozioökonomischer und politischer Ungleichheit verursacht wird und zu einem Teufelskreis des Niedergangs führt. Seit einiger Zeit werden soziale Innovationen häufig im Zusammenhang mit der Entwicklung des ländlichen Raums diskutiert und sogar als Schlüssel zu deren Wiederbelebung angesehen und zur Bewältigung solcher gesellschaftlichen Herausforderungen. Inwieweit und wie soziale Innovationen zur Entwicklung des ländlichen Raums beitragen, und insbesondere einem negativen Trend entgegenwirken können, ist jedoch nach wie vor eine offene Frage.

Ziel dieser Untersuchung ist es, das Potenzial der sozialen Innovation für die Wiederbelebung des ländlichen Raums über die Klärung der Rollen der Akteure in sozialen Innovationsprozessen zu erforschen. Für die Studie wurden vier Fälle aus der Praxis der ländlichen Entwicklung in Taiwan herangezogen, darunter zwei von der lokalen Gemeinschaft voran getriebene und zwei durch externe Unterstützung induzierte Fälle. Die besondere Aufmerksamkeit, mit der die vier Fallstudien untersucht wurde, beruht auf den folgenden vier Zielen: (1) Untersuchung der Rolle von Akteuren bei gemeinschaftsgetriebenen sozialen Innovationen; (2) Klärung der Rolle von Akteuren bei extern unterstützten sozialen Innovationen im ländlichen Raum; (3) Erarbeitung von Empfehlungen für die Integration des Konzepts der sozialen Innovation in politische Maßnahmen und Programme zur Entwicklung des ländlichen Raums; (4) Förderung theoretischer und methodologischer Erkenntnisse für die Untersuchung sozialer Innovationen im ländlichen Raum.

Die Forschung stützt sich auf das Modell der sozialen Innovation nach Neumeier (2012). Darüber hinaus wurden die beiden analytischen Rahmenwerke, die Akteur-Netzwerk-Theorie (ANT) und das auf einem akteursorientierten Ansatz basierende Rahmenkonzept für ortsbezogenes gemeinsames Lernen, vergleichend angewandt, um die Rollen der Akteure in der ländlichen sozialen Innovation zu entflechten. Methodisch handelt es sich bei der Studie um eine qualitative Forschung, bei der die Datenerhebung anhand von Literaturauswertung und semi-strukturierten Interviews mit 42 Befragten erfolgte. Für die Datenanalyse wurden alle Interviews aufgezeichnet, in Word-Dokumente transkribiert und mittels gemischter Kodierungsmethoden in der Software NVivo analysiert.

Die Ergebnisse sind als Akteursnetzwerke und akteursorientierte Perspektiven dargestellt und erörtern die Rolle der einzelnen Akteure bei der Förderung der sozialen Innovation. Die Studie kommt zu dem Schluss, dass die internen Akteure möglicherweise nicht darauf abzielen, die Gesellschaft zu erneuern - sie beabsichtigen, praktische lokale Probleme zu lösen. Daher können die Ergebnisse sozialer Innovation unbeabsichtigt sein; greifbare und materielle Ergebnisse sind für interne Akteure von entscheidender Bedeutung, was eine in der Literatur verbreitete Sichtweise in Frage stellt, die materielle Ergebnisse als zusätzliche Ergebnisse behandelt. Darüber hinaus könnten externe Akteure nur dann eine

Schlüsselrolle bei der Förderung sozialer Innovation spielen, wenn sie ausreichend Unterstützung aus dem ländlichen Raum und dem öffentlichen Sektor erhalten, was zu ihrem Wachstum bei gleichzeitiger Bewältigung der anstehenden Herausforderungen führt.

Die Studie erörtert auch die Vor- und Nachteile sowie die Unterschiede zwischen gemeinschaftsorientierten und auf externe Unterstützung ausgerichteten Ansätzen. Diese beiden Ansätze sind wie zwei Seiten derselben Medaille - während der erste Ansatz eher lokal orientiert ist, was die anvisierten Probleme und die lokalen gemeinsamen Akteure betrifft, ist der zweite Ansatz eher themenorientiert und konzentriert sich auf die Probleme und die gemeinsamen Akteure ohne geografische Grenzen zu setzen. Darüber hinaus spiegelt der von dieser Studie verfolgte Ansatz der externen Unterstützung bis zu einem gewissen Grad den "nexogenen Ansatz" wider. Aus den empirischen Erfahrungen dieser Studie geht hervor, dass dieser Ansatz keine Garantie für den Erfolg sozialer Innovationen im ländlichen Raum ist - er bietet jedoch eine gute Chance für den öffentlichen Sektor, nicht nur als Partner oder Sponsor in ländlichen Gebieten aufzutreten, sondern aktiv als Brücke zu fungieren, um potenzielle Partner über geografische Grenzen hinweg miteinander zu verbinden.

Im Hinblick auf die Integration sozialer Innovation in politische Maßnahmen und Programme zur Entwicklung des ländlichen Raums werden daher drei Strategien für den öffentlichen Sektor vorgeschlagen: (1) der öffentlichen Sektor sollte aktiv eine Brücken-funktion übernehmen, um Möglichkeiten für die Einbindung externer Akteure zu schaffen; (2) der öffentliche Sektor könnte Programme wie Dorfwettbewerbe oder andere innovative Aktivitäten nutzen, um den Menschen eine erreichbare gemeinsame Vision zu bieten, an der sie sich beteiligen können; (3) Programme zur Entwicklung des ländlichen Raums sollten mehr Aufmerksamkeit auf Bildungs- und Lernprogramme lenken, um Selbst-lernmechanismen in lokalen Gemeinschaften zu entwickeln. Für theoretische und methodologische Einsichten kann die ANT besser genutzt werden, um Forschung unter Berücksichtigung von Ungleichheit und ohne anfängliche soziale Erklärungsannahmen zu betreiben. Der akteursorientierte Ansatz eignet sich für die Untersuchung von Interaktionen zwischen klar differenzierten sozialen Akteuren mit anfänglichen sozialen Erklärungsannahmen.

Aus den Ergebnissen dieser Fallstudie lässt sich schließen, dass soziale Innovation im Hinblick auf die Wiederbelebung des ländlichen Raums in ihren Ergebnissen wertvoll, in ihrer Entstehung unsicher, durch die Marginalisierung des ländlichen Raums herausgefordert und auf externe Beziehungen ohne geografische Grenzen angewiesen ist. Da ländliche Marginalisierung in der Zukunft unvermeidlich scheint, ist es wichtig, ein Leben mit deren Auswirkungen zu gestalten. Soziale Innovation bietet dazu einen Ansatz, wie die abnehmende Zahl der Einwohner in ländlichen Räumen über mehr Selbstorganisation und externe Partner und Beziehungen gemeinsame gesellschaftliche Probleme lösen können – ohne geographische Grenzen.

List if Abbreviations and Acronyms

ANT	Actor-network theory
BRRAA	Balian Rural Regeneration Advancement Association
COA	Council of Agriculture
LAG	Local Action Group
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale
MOC	Ministry of Culture
NUU	National United University
OPP	Obligatory Passage Point
PCDA	Picheng Community Development Association
RRP	Rural Regeneration plan
RUP	Rural-up
RUP II	Rural-up II
RSEP	Rural Social Enterprise programme
SLBT	Small Landlords and Big Tenants
SWCB	Soil and Water Conservation Bureau
SWCB-TB	Soil and Water Conservation Bureau, Taichung Branch
TYHA	Taiwan Yuan-Li Handiwork Association
YRP	Youth Return programme

The Potential of Social Innovation in Rural Revitalisation: a comparative case study from Taiwan

1. Introduction

Social innovations are considered promising to cope with societal and socio-demographic challenges in rural areas. They are even viewed as a key to rural revitalisation. In the literature, social innovations are strongly driven by the will to pursue a better quality of life, which includes practical needs of residents (e.g., the ICT, health care, and environmental improvement practices), resulting in innovative, tangible, and intangible changes in society. However, to what extent and how social innovation can contribute to rural development still remains an ongoing concern.

This research aims to clarify the potential of social innovation in the context of rural development in which socio-demographic challenges become severe. This chapter will give an introduction to the research by first providing an overview of the background, followed by the problem statement, the research aims, objectives, and questions, and finally, the structure of this dissertation.

1.1 Background of the research

Many rural areas in the world have been suffering severe socio-demographic challenges, especially the issue of depopulation (OECD, 2018). In 2018, the Organization for Economic Cooperation and Development (OECD) revealed the policy note of Rural 3.0 - A framework for rural development, which pointed out a significant mega-trend in rural areas that depopulation is forecasted to continue in the future of rural areas around the OECD countries (OECD, 2018). Such a depopulation issue is caused by socio-economic and political inequality at large (KÜHN, 2015). The consequence is explicit characteristics of marginalisation, which are influences of service provision and, in turn, may locally lead to vicious circles of decline (COPUS ET AL., 2011; BOCK, 2016).

From a global viewpoint, the rural population proportion in Latin America decreased by 24% during the period of 1970 to 2020, while this declining trend was less extreme in North America and Europe, with decreases of approximately 9% and 10%, respectively; in

contrast, the situation in East and Southeast Asia was even more difficult in recent decades (LI ET AL., 2019). For instance, China, South Korea, and Malaysia have witnessed dramatic declines in rural population proportion since 1970 of approximately 44%, 41%, and 44%, respectively (WORLD BANK, 2021). Similar patterns and challenges have also occurred in Taiwan since the 1970s (COA, 2012: P. 2). During the period from 1975 to 2018, the rural population witnessed a dramatic decline from 10 to 5 million people, or from 60% to 22 % of the total population, mostly caused by outmigration (UNITED NATIONS, 2018). In this context, rural development measures are expected to play a critical role in addressing such rural decline (LI ET AL., 2016; LIU & LI, 2017) since they are conceived within national policy frameworks and shaped by a selection of socioeconomic concepts and theories (OECD, 2006).

Since the early 1990s, the paradigms of rural development have shifted from "top-down" exogenous development to a "bottom-up" endogenous model, particularly in Europe (VAN DER PLOEG, 2000; WOODS, 2011). In the early 2000s, the "neo-endogenous model" gained prominence, according to which local development forces may be strengthened by joining extralocal networks and accessing extralocal resources with locally grounded forces (RAY, 2006; BOSWORTH ET AL., 2016B). Thus, as a holistic approach, the success of neo-endogenous rural development relies on a mixture of bottom-up initiatives, collective action, and local actors' linkages with external connections (RAY, 2006; GKARTZIOS & LOWE, 2019). In rural Taiwan, this political shift of combining bottom-up policy with support for multiple sectors to enhance competitiveness in rural areas had a significant influence. However, despite the efforts of long-term (neo)endogenous rural development policies, the trend of rural depopulation in Taiwan seems inevitable; by 2050, a loss of 50% compared to 2018 is forecasted (UNITED NATIONS, 2018). To ensure the future of Taiwan's rural areas, hence, exploring a new approach, such as social innovation that addresses the continuous cycle of decline and contributes to rural development policies, is expected and urgently needed (BOCK, 2016; BOSWORTH ET AL., 2016A; NEUMEIER, 2012; 2017).

1.2 Problem statement

In recent publications, social innovation has been considered promising for the advancement of rural areas (BOSWORTH ET AL., 2016A; BOCK, 2016; DAX ET AL. 2016;

NEUMEIER, 2017; NOACK & FEDERWISCH, 2019). It is seen as a chance to fight current societal dilemmas, such as marginalisation or peripheralisation (BOCK, 2016; BOSWORTH ET AL., 2016A), and even social inequality and injustice (MULAERT ET AL., 2013). Conceptually, social innovations are well understood "as new solutions (products, services, models, markets, processes, etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources" (THE YOUNG FOUNDATION 2012, P.18). This implies that social innovation does not only aim to provide local problem-solving outcomes but also changes social relations and shapes certain forms of process innovation (MOULAERT ET AL., 2005), driven by bottom-up participation and civic engagement (MOULAERT ET AL., 2013; TEPSIE, 2014; BOCK, 2016), to pursue "a better future" (POLE AND VILLE, 2009: P. 10). Researchers call for attention to more empirical evidence to explore the potential of social innovation in rural development contexts (BOCK, 2016; BOSWORTH ET AL., 2016A; NEUMEIER, 2012; 2017; NOACK & FEDERWISCH, 2019).

Some authors emphasise that social innovation is connected to the core concerns of neo-endogenous rural development (BOCK, 2016; NEUMEIER, 2012). These concerns include finding new solutions to solve local problems and also to induce social change and new relations to empower communities (NEUMEIER, 2012; BOCK, 2012). Social innovation could be regarded as an ideal form of achieving outcomes in neo-endogenous rural development and community-driven revitalisation practices, namely, "sustainable social benefits" (HOWALDT AND SCHWARZ, 2010). In other words, if we expect that the outcomes of rural development can contribute to improving rural people's quality of life in a more sustainable way, pursuing social innovation will be vital for success (NEUMEIER, 2012; BOCK,2012; DAX ET AL., 2016). However, how to integrate social innovation into rural development programmes and policies is still blurry (BOSWORTH ET AL., 2016A; NEUMEIER, 2017; NOACK & FEDERWISCH, 2019). The tension between bottom-up and top-down rural development approaches that boosts or hinders social innovation engagements should be further explored (NEUMEIER, 2012).

From a rural development perspective, the bottom-up initiative from local actors is critical for successful social innovation, but top-down influences from the public sector and external actors should also be taken into account as potential triggers (DARGAN &

SHUCKSMITH, 2008; BUTKEVIČIENĖ, 2009; NICHOLLS AND MURDOCK, 2012). Both community-driven and external support-driven social innovations are possible in the rural development context. However, it is still not well understood to what extent and how internal, external, and public sector actors trigger social innovation in the rural development context, presenting a lack of empirical studies (NEUMEIER, 2012; 2017; NOACK & FEDERWISCH, 2019).

From theoretical and methodological viewpoints, an actor-oriented approach has been considered a suitable way in studying rural social innovation by clarifying how social actors negotiate and interlock with others in an interface (NEUMEIER, 2012). However, the emergence of social innovation is strongly driven by the willingness to pursue a better quality of life, which is often related to tangible (material) and practical needs (BOCK, 2016: P. 563). Researchers often emphasise on its intangible or social outcomes and treat its material outcomes as supplementary results in explaining collective social action (BUTKEVIČIENĖ, 2009; NEUMEIER, 2012). This implies that the effects of the material world might be underestimated in explaining the nature of social innovation; the silent actors, nonhuman actors (actants) and vulnerable individuals that are considered the target group of social innovation might be neglected (CALLON, 1986; LATOUR, 2005). In other words, if the functioning of social innovation aims to address the vulnerable group's practical and material needs, the material world should be treated more equally (LATOUR, 2005). However, whether the more material world concerns can benefit our understanding of collective social arrangement is needed to clarify (LONG, 2015).

To summarise the above arguments in terms of the research gaps, hence, it merits further empirical research considering the material perspective to clarify what extent and how internal, external, and even the public sector actors can contribute to fuelling rural social innovation. In addition to clarifying the tension between bottom-up (i.e., community-driven) and top-down (i.e., external support-driven) approaches in terms of triggering rural social innovation, and a step further to provide recommendations for integrating social innovation into rural development programmes and policies (BOSWORTH ET AL., 2016A; NEUMEIER, 2017; NOACK & FEDERWISCH, 2019; VERCHER ET AL., 2021). These would help to fulfil the gap of clarifying the potential of social innovation in rural revitalisation.

1.3 Research aims, objectives, and questions

This study aims to unravel the potential of social innovation in rural revitalisation by clarifying the actors' roles in social innovation processes. In particular, the study made use of four cases of rural development practice in Taiwan initiated in the frame of neo-endogenous development policies, including two community-driven and two external support-driven cases. The special attention of these case studies draws on the role of internal and external actors, the differences between community-driven and external support-driven rural development approaches, and the support of the public sector in fuelling social innovation. Additionally, theoretical and methodological insights are discussed. Four objectives and their research questions were formulated as follows:

- **Objective 1: To explore the role of actors in community-driven rural social innovation (bottom-up approach).**
- Research questions:
  1. How do internal (local) actors trigger community-driven rural social innovation?
  2. What is the role of the public sector in fuelling community-driven rural social innovation?
  3. Which human and nonhuman actants matter in shaping rural social innovation?
- **Objective 2: To clarify the role of actors in external support-driven rural social innovation (top-down approach).**
- Research questions:
  1. How do external actors trigger external support-driven rural social innovation?
  2. What is the role of internal (local) actors and the public sector in fuelling external support-driven rural social innovation?
- **Objective 3: To provide recommendations for integrating the concept of social innovation into rural development policies and programmes.**
- Research questions:
  1. What are the pros, cons, and differences between community-driven and external support-driven approaches in fuelling rural SI?

2. What is the role difference of the public sector between community-driven and external support-driven rural SI?
3. How can the public sector support and boost rural SI?
4. How can rural development policies and programmes integrate SI into design?

- **Objective 4: To further theoretical and methodological insights for the study of rural social innovation.**
- Research question: what theoretical and methodological considerations matter in studying rural social innovation?

1.4 Structure of this dissertation

In Chapter one, the context of the study has been introduced and the research aims, objectives, and questions have been clarified. Chapter two reviews the literature to identify the fundamental knowledge of social innovation and rural development. The theoretical framework is structured in Chapter three by adapting a model of social innovation from NEUMEIER (2012) as the foundation for examining the social innovation process and two analytical frameworks for analysing actors, including the lens of the Actor-Network Theory (ANT) and the place-based, joint learning framework together with the actor-oriented approach.

In Chapter four, the methodology is presented, including the adoption of a qualitative case study approach. Here, the background of the research design, the research philosophy, the four selected cases, and data collection and analyses steps are discussed. In Chapter five, the results are presented case by case, differentiating between the ANT perspective on community-driven social innovation (5.1) and the external support-driven innovation process (5.2) as captured with an actor-oriented approach, that is, the place-based, joint learning framework. The discussion chapter follows the four main objectives and research questions comparatively. Finally, the conclusion highlights the essential findings and the limitation of this research.

2. Literature review

This chapter provides a general introduction to rural development, with a particular focus on recent trends in the first section. The second section presents the conceptual foundations of "social innovation." Finally, the relevance of this compilation for the thesis is briefly outlined.

2.1 Paradigm shifts in rural development

"How should rural areas be developed?" is a long-standing question that many researchers have frequently discussed. Rural development is driven by a view to improving rural people's quality of life; hence, it has multidimensional implications that refer to all the human resources in rural areas, including the development of agriculture, environment, and socio-economic aspects (MOSELEY, 2003). From the literature, many studies revealed the shifts in the rural development paradigm from an earlier "top-down" exogenous development to a "bottom-up" endogenous approach (VAN DER PLOEG, 2000; WOOD, 2005), and to a more recent neo-endogenous model, which embraces both exogenous and endogenous strengths (WARD ET AL., 2005; RAY, 2006; BOSWORTH ET AL., 2016B; GKARTZIOS & LOWE, 2019).

The earlier exogenous model has a long history and treats rural areas as a supplement to urban areas (LOWE ET AL., 1998). The decision-making process in the exogenous model is mostly externally driven by the state. Such a top-down approach is reflected in governments that tend to modernise rural areas through direct investments in infrastructure or employment (WOOD, 2005). However, the exogenous model has been criticised for its high dependency on external support leading to an unsustainable development that was characterised by dependent, distorted, destructive, and dictated features (LOWE ET AL., 1998). Such criticisms eventually led to the endogenous model, which prioritised the "local", emphasising territorial development, exploiting local resources, and empowering local people for capacity building and overcoming social exclusion (LOWE ET AL., 1995; RAY, 2006).

The model shift has been driven by practical experiences, such as the EU LEADER programme (LOWE ET AL., 1995; VAN DER PLOEG, 2000). The abbreviation of "LEADER"

originates from the French language “Liaison Entre Actions de Développement de l'Économie Rurale (Links between activities for the development of rural economy).” It was first established in 1991 as an experimental programme drawing on bottom-up and community initiatives, which fundamentally differ from typical top-down approaches. However, scholars raised criticisms about the “dichotomy” between the exogenous and the endogenous models and emphasised the influences from external forces in local realities cannot be ignored, as is the case in many LEADER experiences (WARD ET AL., 2005; GKARTZIOS AND LOWE, 2019). Therefore, an approach “beyond exogenous and endogenous model” has been frequently discussed. MURDOCH (2000) pointed out "the third way" and argued that networking is the key to breaking through the traditional dichotomy.

RAY (2001, 2006) introduced the "neo-endogenous development model" to embrace the exogenous and endogenous models by promoting local and extra-local connections with a multi-sectoral approach through networking. In particular, as a holistic approach, neo-endogenous development aims to maximise the value of local resources and enhance local competitiveness, and even foster innovation through networking between local actors and external influences (GKARTZIOS AND LOWE, 2019; LOWE ET AL., 2019). Thus, neo-endogenous development combines the strengths of both models and shapes and influences rural policies, program design, and implementation (GKARTZIOS & LOWE, 2019).

However, this model has been criticised mainly for two aspects: Firstly, its success might be difficult to happen in marginal rural areas due to the lack of capacity to build internal and external networks, a lack that may reproduce the existing weaknesses in marginal rural areas (BOCK, 2016; MURDOCH, 2000: P.416); Secondly, external support related bureaucracy and top-down intervention might negatively influence community actors’ core spirits and innovation process (COPUS ET AL., 2011; POLLERMANN ET AL., 2013; DAX ET AL., 2016). These two critical aspects reveal a striking bottleneck of the neo-endogenous development model in facing rural decline, that is, the more marginal rural areas, the more external support and top-down intervention are demanded; however, the more such demand is met, the more external influences occur which potentially hampers the community-driven innovation process.

For those marginal rural areas, BOCK (2016) proposed a "nexogenous approach" that is fundamentally rooted in the functions of social innovation. Instead of focusing on territorial development, the approach underlines the importance of reconnecting and constructing social-political linkages that cross geographical boundaries and rural spaces. This implies the potential exogenous resources do not be limited by a regional sense. Instead, they can be somewhere across space when the endogenous forces match them to boost social innovation. However, the bottleneck revealed in the discussion of neo-endogenous development still remains questioned. The tension between internal forces and external influences in forming social innovation and its potential to contribute to the advancement of rural areas still demands more research to clarify (BOSWORTH ET AL., 2016A; BOCK, 2016; NEUMEIER, 2017).

2.2 Identifying social innovation in rural development

The term “Social innovation” is broadly used in the policy, academia, and practice and refers to many disciplines, such as planning, geography, regional economics, management, etc (MOULAERT ET AL., 2013; NEUMEIER, 2012). Many researchers have argued that there is a dilemma in trying to convince others to adopt a commonly agreed definition (POL AND VILLE, 2009; BOCK, 2012; NEUMEIER, 2012; TEPSIE, 2014). For a better common ground for defining social innovation, POLE AND VILLE (2009) pointed out social innovation as “new ideas conducive to human welfare enhancement” (p. 4). In other words, it is fundamentally driven by pursuing a better future quality of life that shares the same vision of rural development.

From a rural development perspective, NEUMEIER (2012) attempted to clarify social innovation and its role in rural development by reviewing the amounts of transdisciplinary findings. He then defined social innovations as “changes of attitudes, behaviour or perceptions of a group of people joined in a network of aligned interests that in relation to the group’s horizon of experiences lead to new and improved ways of collaborative action within the group and beyond” (p. 55). From his viewpoint, social innovation exists in an innovation process; its ultimate outcomes are not only new ways of collaboration or social relations but also changes in attitudes, behaviour, or perceptions among actors that mainly focus on intangible outcomes.

Instead of defining a general definition of social innovation, BOCK (2012) argued that social innovation should be defined case-by-case based on its main features and explanations in a specific context (p. 62). Therefore, she identified social innovation with a wider perspective through three interpretations: Firstly, the social mechanisms of innovations that underline innovation with social relations, practices, and values; Secondly, the social responsibility of innovations that focuses on dealing with social needs; Thirdly, the innovation of society, which emphasises the purpose of social innovation, is to pursue a better and equal society, such as social inclusion and justice. These interpretations point out the three core elements of social innovation, including innovation processes, social change, and social responsibility.

From a European policy perspective, THE YOUNG FOUNDATION (2012) has defined "Social innovations as new solutions (products, services, models, markets, processes, etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act" (p. 18). This definition can be seen as an improvement from its earlier versions (BEPA, 2011: 22; EUROPEAN COMMISSION, 2011; MULGAN AND PULFORD, 2010: 17-18). The definition reveals central features of social innovation that coincide with NEUMEIER (2012) and BOCK (2012). It provides a clear view of the whole picture that social innovation as an innovation aims to meet social needs by building new social relationships and collaborations and value empowerment (MOULAERT AND NUSSBAUMER, 2005; HOWALDT AND SCHWARZ, 2010; NEUMEIER, 2012).

We can summarise social innovation with certain core features from the above three definitions. That is, social innovation is characterised by providing non-material and intangible goods for sustainable social benefits. This has been considered an essential and unique character of social innovation compared to other types of innovation (HOWALDT AND SCHWARZ, 2010, P. 21; NEUMEIER, 2012). A second characteristic consists of its outcomes as solutions with relative novelty to existing solutions tailored to meet social needs (BOCK,2012; NEUMEIER, 2012; THE YOUNG FOUNDATION, 2012). Moreover, social innovation refers to process innovation (MOULAERT ET AL., 2005), in which beneficiaries are mobilised to practice collective action resulting in a new form of civic engagement,

empowerment, and social relations (BOCK, 2012; NEUMEIER, 2012; MOULAERT ET AL., 2013). This reveals that the outcomes of social innovation are not simply results-oriented, functioning to meet social needs, but also process-oriented, creating new forms of collaboration and sustainable social benefits, which in turn empower society (THE YOUNG FOUNDATION, 2012; TEPSIE, 2014; BOCK, 2016). In this study, hence, social innovation is identified through the above-mentioned core features as follows: (1) its outcomes represent novel solutions; (2) it aspires to meet social needs; (3) it mobilises beneficiaries to practice collective action; and (4) it results in a new form of civic engagement and new social relations that is socially innovative.

This chapter explored the paradigm shifts of rural development and its current bottleneck in terms of revitalising rural areas. Furthermore, the core features of social innovation were introduced and identified. The next chapter will introduce the theoretical framework of this research built upon Neumeier's model of social innovation (2012) and the two selected analytical frameworks for analysing actors' roles in rural social innovation practices.

3. Theoretical framework

This chapter introduces the theoretical framework of this research. The first section presents the model of social innovation adapted from NEUMEIER (2012). The framework is used as the foundation of this research in which the whole research framework and its relations to all objectives are outlined. Subsequently, two analytical frameworks are introduced for studying objectives 1 and 2. The second section presents the lens of Actor-network theory (ANT) as an analytical framework aiming to consider the material world in studying social innovation. The final section presents an actor-oriented approach based framework, namely, the place-based joint learning framework adopted from WELLBROCK (2013) for comparing with ANT in a theoretical and methodological sense.

3.1 The social innovation process framework

This study aims to clarify how internal, external, and public sector actors trigger social innovation in rural development. Based on the rural development perspective, NEUMEIER (2012) and (2017) built upon actors' perspectives and developed a conceptual model of social innovation, which structured the process of social innovation into three phases. The three stages are characterised as "Problematisation", "Expression of interest", and "Delineation and coordination" and are further explained as follows (NEUMEIER 2017, p.35):

- "Problematisation: this is the identification of a need by a small group of actors, triggered by an initial impetus, external or internal to the actors involved (like a threat or impairment, emotional issues, or themes of interest to potential regional actors). This need leads to the formation of an initial group of actors seeking a solution to the identified need."
- "Expression of interest: other actors join the core group of actors as they see some kind of advantage for themselves in participation."
- "Delineation and co-ordination: interested actors negotiate about the new form of collaborative action/organisation. Skills, knowledge and know-how are exchanged between the participating actors, and mutual learning occurs. A new form of collaborative action gets shaped. If the new form of collaborative action becomes

accepted and is implemented by the majority of participating actors and beyond, as it proves to be superior to 'traditional' forms, then one can speak of social innovation."

The process of social innovation is described in Figure 1.

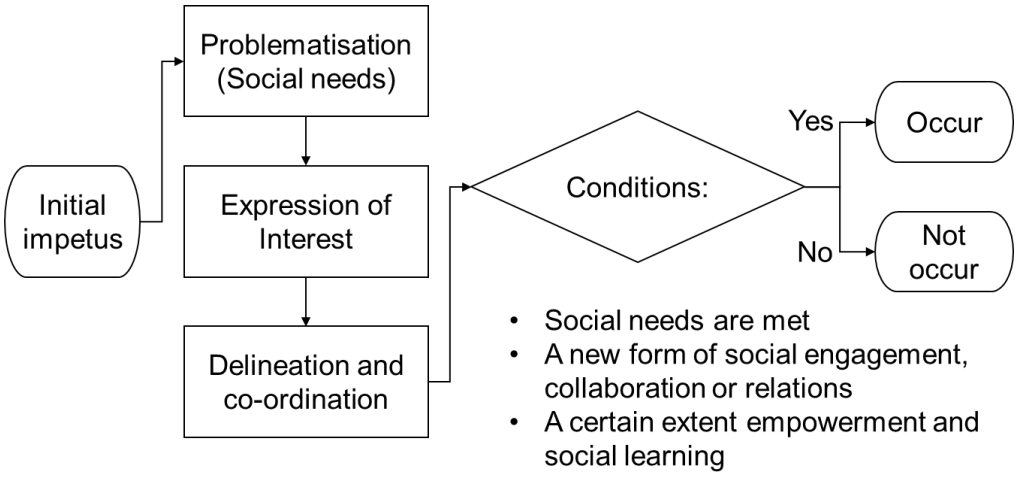

Figure 1: Process of social innovation (adapted from Neumeier 2012: p. 57)

The above three stages provide a strong foundation for how actors would act in a social innovation process. Moreover, the model also reveals that internal and external actors and their interactions may be critical with regard to fulfiling the need and triggering innovation processes. Last but not least, the outcomes include a new form of networking among actors and actors' capacity enhancement. In other words, the compulsory conditions to identify social innovation include the social needs being met, a new form of engagement, collaboration, or relations being created, resulting in a certain extent, empowerment and social learning among actors.

The model is adapted for the identification of social innovation in rural revitalisation practices. According to the four research objectives, the research framework is structured in Figure 2.

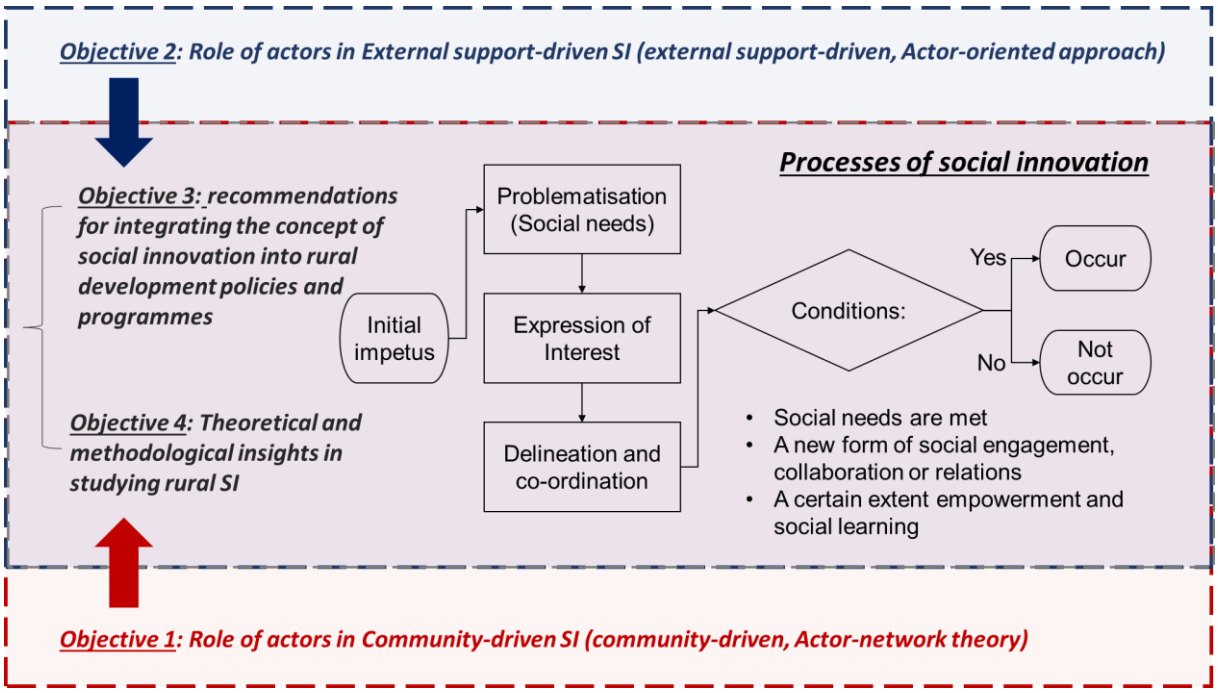

Figure 2: Research framework

Objective 1 can be seen in the red zone that focuses on community-driven rural social innovation (endogenous forces). Actor-network theory (ANT) is applied to mainly clarify how internal actors are shaping social innovation from community-driven revitalisation practices and drawing attention to the role of the public sector, as well as human and nonhuman actors (actants) to disentangle the complexity of interactions that leads tangible and practical needs to forming intangible social benefits in rural social innovation processes.

Objective 2 is on the blue zone that focuses on external support-driven social innovation (exogenous forces). The attention draws on how external actors are triggering social innovation from external support-driven revitalisation practices, as well as the role of internal actors and the public sectors. This objective makes use of the place-based joint learning framework (an actor-oriented approach), which is characterised by actors from three different domains, and interface analysis, which can explore a wide range of actor capacities in the emergence of practices and joint learning. Conceptually, different from ANT, the actor-oriented approach focuses on social actors and is rooted in a social constructionist perspective. This provides a comparable basis for theoretical and methodological exploration in studying rural social innovation.

Objectives 3 and 4 are located in the overlapping zone between the red and blue zone that uses a comparative perspective to examine the similarities and differences in terms of objectives 1 and 2. Objective 3 focuses on finding recommendations and strategies for integrating the concepts of social innovation into rural development policies and programmes by comparing the differences between community-driven and external support-driven rural social innovation, including the pros, cons, and differences between the two driven approaches, as well as the public sector's role. Objective 4 draws attention to theoretical and methodological insights between ANT and the actor-oriented approach in studying rural social innovation. The two analytical frameworks are introduced in the next sections.

3.2 Actor-Network theory

The Actor-network theory (ANT) is applied to reach the first objective. The theory was developed by Bruno Latour, Michel Callon, and John Law in the early 1980s. Broadly, ANT uses a constructivist approach to describe the social and natural worlds through a heterogeneous network among human and nonhuman actors (CALLON, 1990; LAW, 1992). The concept of heterogeneous networks implies that "things" and "people" are equal in ANT, which rejects the traditional dualism between the social and the material worlds (LATOUR, 1996; MURDOCH, 2000; LONG, 2001). ANT also refuses any ontological assumptions (BUEGER & STOCKBRUEGGER, 2017) and treats a social force as the result of interactions between human and nonhuman actors (LONG, 2001; LATOUR, 2005). In this context, ANT emphases describing social activities rather than explaining them (LATOUR, 2005).

The term "actant" is somehow interchangeable with "actor" in ANT research. An "actant" is defined as "anything provided it is granted to be the source of an action" and is used to describe both human and nonhuman entities of actions (LATOUR, 1996: P. 373). The engagement of an actant in an actor-network requires agencies that include giving the actant the account of a traceable action and, through negotiations, sticking in networks with others, which results in actants having their own theories of action (LATOUR, 2005; DWIARTAMA & ROSIN, 2014). The term "actor-network" can also be understood as "work-net" that does not simply mean the technical connection between actants. Instead, it also implies a

traceable entity to describe how actants shape things through networks or assemblages (LATOUR, 2005).

The translation is a critical process in ANT, which transforms related actants from the social and natural worlds into actor-networks (CALLON 1986, LATOUR,1987). ANT Translation is also understood as all the power-loaded interactions, negotiations, and displacements of interests, through a series of iterations in which the network of actants is changed (CALLON, 1990; LAW, 1992). This process results in a situation in which certain actants may control others (CALLON, 1986).

CALLON (1986) established "four moments of translation" as the analytical framework to construct an actor-network among actants: (1) Problematisation: a dynamic process that tries to define actants with a common problem and a shared purpose to identify the desired goal that a system of alliance looks for and associates with. At this moment, the "obligatory passage point" (OPP) is the key that forces actants to converge on a certain topic, purpose, or question. The OPP is developed through different actants' identifying their own interests. When the path to pursuing their interests is blocked due to certain obstacles, the actants have to find an alternative path in order to reach their own interests. They believe they can benefit and fulfil their interests through this alternative path, which converges different actants into a certain purpose, that is, the OPP (CALLON, 1986, P. 203). (2) Interessement: a group action that attempts to interpret the connection in order to stabilize the identity of other actants and to "lock" allies into the network (CALLON, 1986, P. 203). (3) Enrollment: a process to provide a series of concrete statements and interpretations for the role and coordination among actants after the previous moment of interessement. (4) Mobilisation: a process to ensure that the spokespeople are representative; the reality of nature and society is the result of negotiations that spokespeople represent. Finally, after the translation process, all actants connect to each other in a heterogeneous network, representing the situation of society and nature at a frozen moment in time (LATOUR, 1987; CALLON, 1990; TSOHOU ET AL., 2012).

The translation approach of ANT provides a comprehensive framework for clarifying how different actants interact and how networks are constructed in transformation processes (WOOD, 1998). This implies that both the roles of human and nonhuman actants can be

observed and addressed specifically in the context of social innovation (HEEKS, 2013). Most importantly, ANT provides an opportunity to rethink what we have understood about social innovation from a traditional sociologist perspective. LATOUR (2005) argued that sociologists "wanted to keep the original intuition of social sciences that they had to adamantly reject the impossible solution that was proposed, namely that society is unequal and hierarchical" (p. 64). In other words, ANT addresses the existence of asymmetries, inequalities, and hierarchies in society and refuses to provide explanations of the "social" that ignore these differences from the start of an action. Instead, it explains an action by understanding how actants interact with each other and networks are structured (p. 64). Thus, the lens of ANT provides an opportunity to observe nonhuman actants, silent and vulnerable groups, or individual actions through actor-network construction (CALLON, 1986). The nature of social innovation strongly reflects the social needs which might be caused the most by the inequality of different kinds (MOULAERT ET AL., 2013; BOCK, 2016). Hence, ANT may help lead to a better understanding of the complex realities of rural social innovation.

The first objective of this study under the lens of ANT can be visualised in Figure 3. Actor networks can be understood as "freeze frames" of a system of alliances at a certain moment in time (LATOUR, 1987: P. 138). The analytical framework shows the transformations of actor-networks through time from the past to the present. In addition, four time phases are used to describe critical moments of community-driven rural revitalisation, including initial status, beginning to change, taking actions, and present status. Through the lens of ANT, hence, social innovation can be later observed after the actor-network construction by way of the development path of communities, which is driven by dynamic changes of actor-networks in solving certain local problems. This implies that forming actor-networks also involves developing new forms of collaboration and social relations in solving social needs.

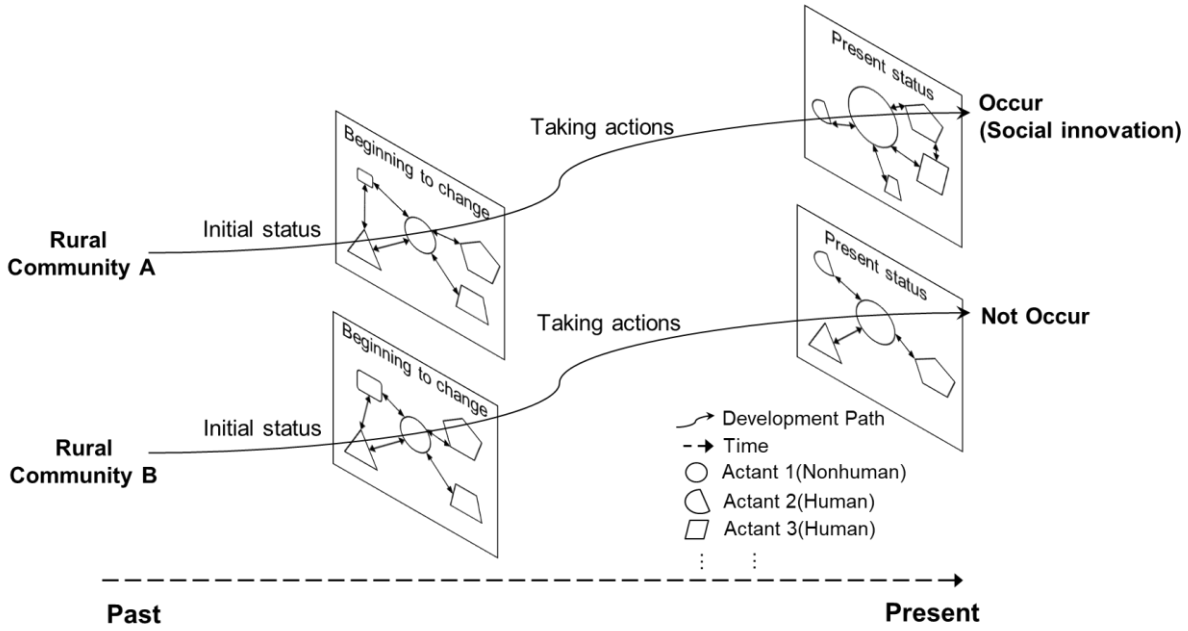

Figure 3: ANT analytical framework

3.3 Actor-oriented approach: the place-based joint learning framework

The actor-oriented approach is applied to study the second objective. The approach is rooted in the field of development studies and flourished in the 1990s (BOOTH, 1994; PRESTON, 1996). It has been considered "a significant advance and antidote to the excesses of structuralist and culturalist types of explanation" (LONG, 2001: P. 2). We apply the "actor-oriented approach" based on LONG (2001), which is philosophically grounded in a social constructionist perspective. Conceptually, instead of focusing on broad social forces, the idea of an actor-oriented approach explores different social actors' "strategies and rationales, the conditions under which they arise, how they interlock, their viability or effectiveness for solving specific problems, and their wider social ramifications" (p. 6).

There are three core elements in terms of an actor-oriented approach, including "agency", "social actors", and "interface analysis." Firstly, the concept of agency in the actor-oriented approach is different compared to the agency in ANT. The concept here focuses on human aspects that refer to "the knowledgeability, capability and social embeddedness associated with acts of doing (and reflecting) that impact upon or shape one's own and others' actions and interpretations." (p. 240); secondly, social actors are the focus actors in an actor-

oriented approach that can be individual persons, organisations, and even collective groups that have agency (p. 241); thirdly, actor-oriented approach analyses social actors on a social interface that is defined as "a critical point of intersection between lifeworlds, social fields or levels of social organisation where social discontinuities, based upon discrepancies in values, interests, knowledge, and power, are most likely to be located" (p.243). For interface analysis, the interface is viewed as "an organized entity of interlocking relationships and intentionality" (LONG, 1999) that focuses on the linkages and networks that develop between individuals or groups. It is also seen as a site for conflict, incompatibility, and negotiation, as well as the centre of knowledge processes. Moreover, it helps to understand better the transformation of differences in worldviews or cultural paradigms (LONG, 2015). In other words, the actor-oriented approach examines rural social innovation by clarifying how social actors interlock with others and how knowledge and perspectives are transformed and negotiated in an interface. The approach is considered a suitable way of studying social innovation in the rural development context (NEUMEIER, 2012).

The second objective of this study aims to clarify the role of actors in external support-driven rural social innovation. An actor-oriented approach based framework is applied; namely, the place-based joint learning and innovation framework adapted from Wellbrock (2013), as Figure 4 shows. This framework studies the joint learning process in rural areas by analysing operational interfaces, places, and moments of cooperation, to connect three different socio-spatial domains involved in place-based joint learning and innovation processes. The domains represent a coherent set of activities driven by actors from rural areas, public administration, and knowledge support structures (p.141). It provides an integrated perspective to clarify how collective learning in rural areas works (WELLBROCK ET AL., 2012).

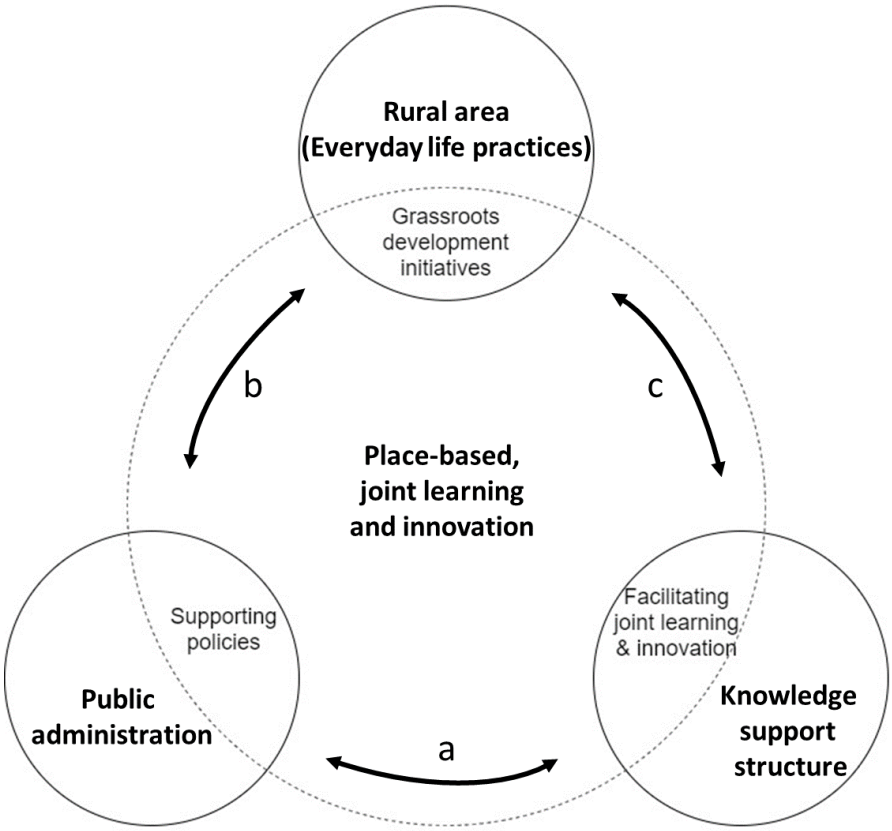

Figure 4: Place-based joint learning and innovation framework (adapted from Wellbrock, 2013: p. 143)

Operational interfaces refer to how the domains operationalise support in joint learning and innovation (WELLBROCK, 2013), as shown in the dotted circle in Figure 4. As a result of institutional arrangements, they refer to how the domains operationalise support, represented by the overlap areas between the domains and the interface. The institutional arrangements from different operational interfaces might connect one or another through the interconnections line a, b, and c. Thus, in operational interfaces, public administration acts by implementing policies, such as development programmes, projects, and incentives; the rural areas act by grassroots development initiatives, for example, local environmental initiatives and local development vision; and knowledge support structures facilitate joint learning and innovation with knowledge and methodological support.

3.4 Comparison between ANT and Actor-oriented approach

The previous sections introduced the ANT and the actor-oriented approach to the research questions formulated for objectives 1 and 2. In comparison of the two theoretical and analytical frameworks, there are three fundamental differences which are critical in this rural social innovation study: the first difference refers to epistemology that the former has its special worldview, as LATOUR (2005) explained that "it more appropriate to do with constructivism what we had done for relativism" (p. 91). Broadly said, ANT uses a constructivist approach that attempts to compose the *objective reality* by "mobilising various entities whose assemblage could fail" (p. 91). It avoids essentialist explanations of events (BUEGER & STOCKBRUEGGER, 2017). The latter approach is rooted in a social constructionist worldview that focuses on making society through the complex processes of social interactions of actors and places knowledge in the domain of social interchange (LONG, 2001; GUTERMAN, 2013).

The second difference refers to the way they look at collective social arrangements. ANT stipulates those social forces do not exist as such. As LATOUR (1994) argued, "[P]urposeful action and intentionality may not be properties of objects, but they are not properties of humans either. They are the properties of institutions, *dispositifs*" (p. 46). Therefore, ANT does not explain the "the social" but describes "the social" as the aggregated outcomes of the interaction among different human and non-human actors (actants). Collective social arrangements are considered the aggregated results of the representative agencies and individual interests; however, the actor-oriented approach views collective social arrangements as "a group of individuals who decide to join together to undertake some common endeavour" (LONG 2001, P. 57).

The third difference lies in the way actors are perceived and shaped. ANT treats human and nonhuman actors in an equal way; in contrast, the actor-oriented approach focuses on social actors. This difference is implicitly formed, which is related to the above discussion of the first and the second differences. The differences between the two analytical frameworks are shown in Table 1.

Table 1: Differences between the two adapted theoretical framework

Adapted theoretical perspective / Items	Actor-network theory	Actor-oriented approach
Epistemology	Constructivism (for relativism)	Social constructionism
Collective forms of social action	An aggregated outcome of representative agencies and individual interests, rather than an existing phenomenon	A group of individuals who decide to jointly undertake an endeavour, an existing phenomenon
Focus actor	Human & nonhuman actors	Social actors

4. Methodology

This chapter firstly explains the study's research design, which includes research philosophy, procedure, methods, data collection, and analysis. Secondly, the research context and areas will be introduced, encompassing the background of rural development policies and information about the selected cases.

4.1 Research design

This research was motivated by exploring the potential of social innovation in the rural revitalisation context and began in October 2018. As the previous chapter has shown, the research philosophy was driven by ANT and an actor-oriented approach. The two epistemological perspectives were used comparatively in case studies to explore how the two perspectives advance our understanding of heterogeneous networks and collective forms of social action. This is expressed in the first and second objective of this research.

The research made use of purposeful sampling. Four cases were chosen by the author based on basic conditions: long-term involvement in rural revitalisation-related programmes, the feasibility of gathering data, and the willingness of actors to participate in this study. For the first objective, the two cases, "Gongrong" and "Picheng" were selected due to they shared similar environmental problems but ended up with different outcomes; one came out with features of social innovation, and the other was not. These opposite cases were considered appropriate to gain more in-depth insights (RAGIN AND BECKER, 1992) to better understand the role of actors in community-driven social innovation. These two case studies are improved and expanded research based on the study from CHEN AND KNIERIM (2020).

For the second objective, the two cases "SunnyRush" and "Ririren" were chosen because they were cases of external support-driven rural social innovation. The two cases illustrated an innovative programme "Rural-up" that bridged external actors with internal actors in rural areas. The two successful cases were considered to provide insight into the role of actors in relation to how an external government programme is triggering rural social innovation.

The first and second objectives were conducted by similar approaches in methodology (i.e., case study) and methods (i.e., desk review and in-depth interviews). However, they were

different in epistemology (i.e., constructivism and social constructionism) and theoretical perspective (i.e., ANT and Actor-oriented approach). Table 2 summarises the differences between the two objectives in relation to the four research foundations, including epistemology, theoretical perspective, methodology, and methods (CROTTY, 1998).

Table 2: Four elements of research foundations on objective 1 and objective 2

Research Foundations	Study	Objective 1	Objective 2
	Type of RD cases	Community-driven rural revitalisation	External support-driven rural revitalisation
	Focus of SI	Role of internal actors, the public sector	Role of external, internal actors, and the public sector
Epistemology		Constructivism (for relativism)	Social constructionism
Theoretical perspective		Actor-network theory	Actor-oriented approach
Methodology		Case studies by translation (Material-semiotic approach)	Case studies by interface analysis
Methods		Desk review In-depth interview	Desk review In-depth interview

The third and fourth objectives were achieved by comparing and summarising the analytical results of the case studies. For the third objective, the cross-case comparison took place in the analysis phase to explore the differences between bottom-up and top-down approaches to fuelling rural social innovation. For the fourth objective, the focus drew on the theoretical and methodological differences between the ANT and Actor-oriented approaches.

The research procedure could be divided into four phases, as Figure 5 shows: the first phase was for research design and preparation that involved an initial literature review, objectives, and research questions forming; the second phase was referring to desk review to analyse literature and grey documents for a better understanding of the background of the selected cases (CRESWELL, 2018); the third phase was fieldworks to collect empirical data from the selected cases. The fieldwork of Objective 1 was conducted between the 3rd of August to the 2nd of September 2019, and Objective 2 was from the 8th of February to the 12th of March 2021. Our purpose was to understand the relationships, interests, and perspectives

of the interviewees viewpoints (RITCHIE ET AL., 2014). In-depth interviews were conducted in the fields with actors who had been actively involved in the selected cases of rural revitalisation; the fourth phase aimed to analyse and compare the result, as well as to address the questions of objectives 3 and 4.

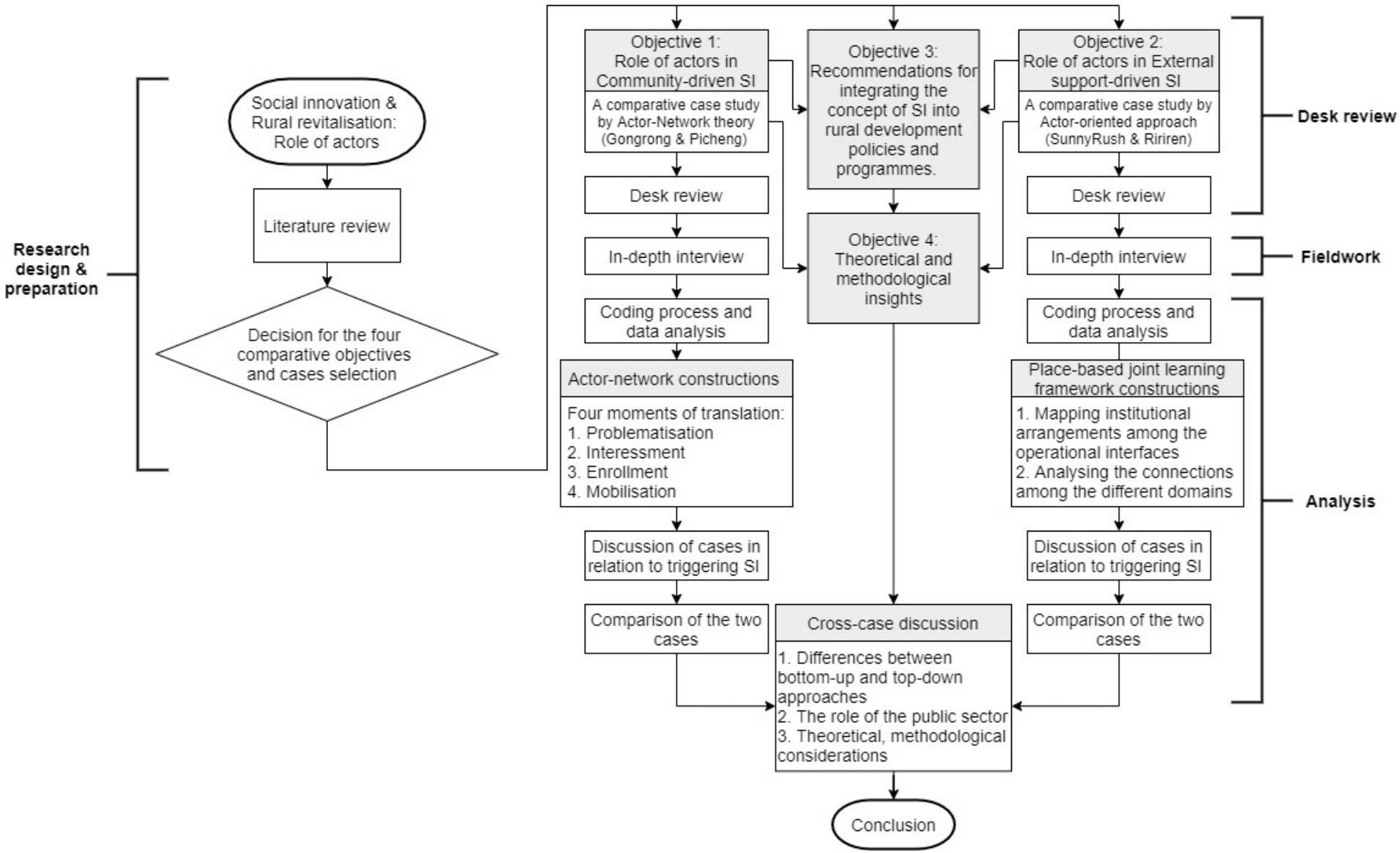

Figure 5: Research procedure

4.2 Materials

4.2.1 Background of rural development in Taiwan

Rural development policies in Taiwan have been changing within the last three decades. Before the 1990s, approaches to rural development mainly relied on exogenous forces. Rural areas were considered supplements of urban areas and treated as places for food production (COA, 2012). In 1994, the concept of endogenous development started being popularised due to the concept of "community building" or "community development" introduced by the Ministry of Culture (MOC) (CHEN AND KU, 2016). The MOC implemented policy instruments that promoted civic engagement, community autonomy, and local cultural features in rural areas (LIU, 2008).

This policy was promoted until 1999, when the great earthquake of September 21 with a magnitude of 7.3, took more than 2,400 lives and damaged roughly 8,500 buildings (half of the houses were utterly destroyed), leaving more than 100,000 people homeless (KAO, 2000: P. 2). The concept of endogenous development played a critical role for those people who needed to rebuild their homelands to cope with such dramatic challenges. At the same time, the Soil and Water Conservation Bureau (SWCB), a governmental body under the Council of Agriculture (COA), conducted reconstruction projects in earthquake-damaged rural areas. It was a time when both bottom-up and top-down concepts were frequently combined in rural areas (COA, 2012).

In 2004, SWCB introduced the pilot empowerment programme of rural regeneration, built upon the earlier foundation of community building. This programme aimed to empower the local people by strengthening their capacities and unlocking local potentials to realise their vision for future development. In 2010, the government of Taiwan established a national act, namely the "Rural Regeneration Act," with 150 billion NT in special funds (approximately 4.4 billion Euro) for revitalising rural areas. The act has been implemented over ten years from the first phase of Rural Regeneration (2012-2015) and the second phase of Rural Regeneration (2016-2019) toward the third phase of Rural Regeneration (2020-2023) (COA, 2019). The historical timeline of Taiwan's rural development is shown in Figure 6:

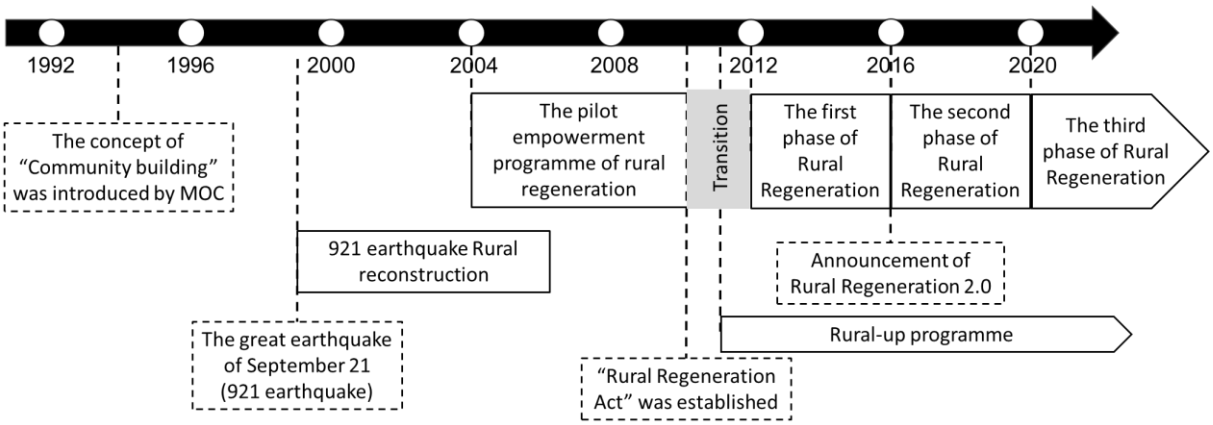

Figure 6: The historical timeline of Taiwan's rural development

The Rural Regeneration policy consists of two pillars. The mechanism is as Figure 7**Error! Reference source not found.** shows: the first pillar is built upon a bottom-up approach, as the right side of Figure 7**Error! Reference source not found.** represents. The bottom-up development starts from the autonomous participation of rural communities. The role of the central government "SWCB" is to hold empowerment training to enhance local people's capacities to develop their communities. A community has to complete 92 hours' courses with a certain amount of participants. After the training is conducted, it has to submit its "Rural Regeneration Plan", which is the blueprint of the community's vision. The plan then has to be approved by local governments and SWCB. Afterwards, the community would be able to propose annual implementation projects to reach their vision (COA, 2012). In 2016, the policy was updated to Rural Regeneration 2.0, whose focus was particularly on enhancing the objectives of environmental sustainability, partnership collaboration, and employment in rural areas (COA, 2019).

The second pillar consists of top-down policy instruments and interventions with partnership collaboration between the public and private sectors for economic development, regional integrated development, and youth return (COA, 2019), such as the Interdisciplinary Rural Industry project, which is driven by COA focusing on economic advancement by integrating various expertise from different disciplines. Moreover, according to local features, COA utilises the Reginal Spots project to connect different characteristics on a regional scale. The perspective to connect local features can be based on the natural landscape, tourist attractions, and even ecological

consideration; furthermore, for local governments, the Integrated Rural development project is crucial to integrate local resources and to plan from a regional perspective; last but not least, the Rural-up (RUP) programme and its relevant programmes, such as Rural-up II (RUP II) programme, the Youth Return programme (YRP), and the Rural Social Enterprise programme (RSEP), particularly play the key role in bringing external actors into rural areas for the revitalisation intended by the Rural Regeneration policy.

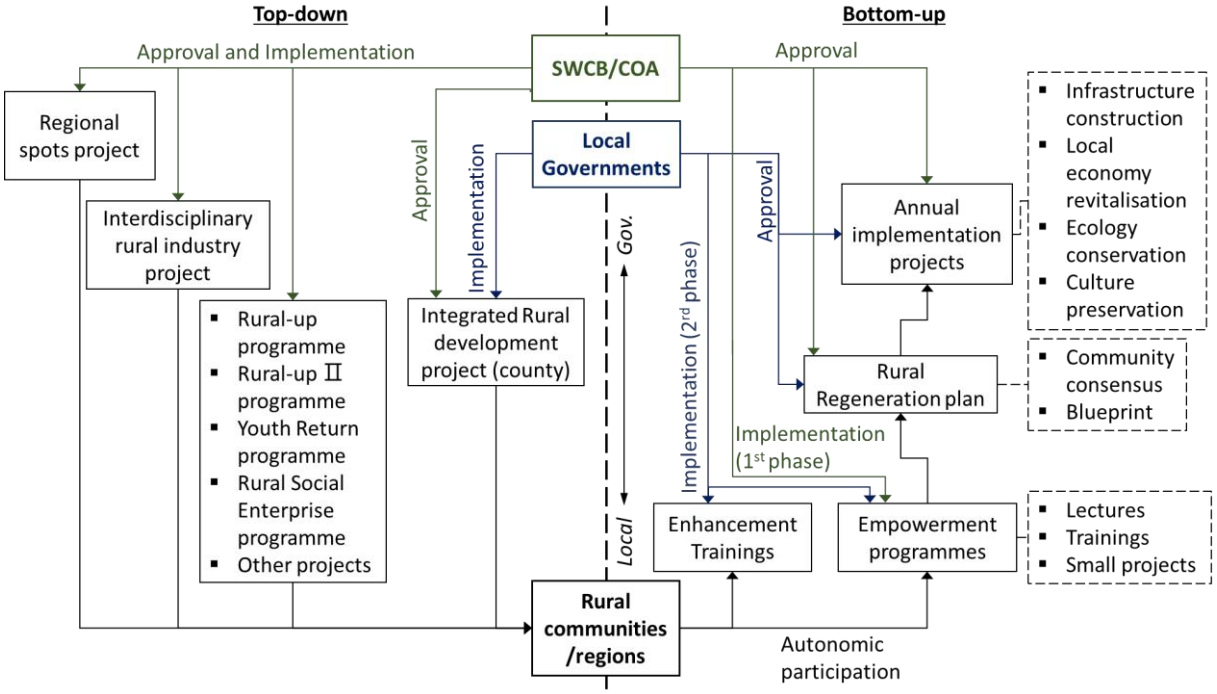

Figure 7: The mechanism of the Rural Regeneration policy

The present study focuses on community-driven revitalisation and its relation to SI, making use of two cases from the Rural Regeneration plan under the bottom-up approach of the Rural Regeneration policy. Secondly, attention is paid to external support-driven revitalisation and its relation to SI, examining two cases from the RUP programme under the top-down approach. The mechanisms of the Rural Regeneration plan and RUP programme are introduced in the following sections.

4.2.1.1 Rural Regeneration plan — bottom-up community-driven revitalisation practice

The bottom-up Rural Regeneration mechanism begins with an empowerment programme, which aims to raise local residents' public awareness for collective action

before public funding is invested in rural areas (COA, 2012), as Figure 8 shows. The processes of joining Rural Regeneration start in rural communities that have strong desires to improve their quality of life and participate in the empowerment training. The training enhances the capacity to solve local problems and use resources in a collective way.

The training is divided into four stages, which are: (1) the local concern stage: communication and basic Rural Regeneration concepts exchange, as well as a brief introduction for various visions that a rural community can be to open local residents' minds for the community's vision and possibility; (2) the intermediate stage: to discover local issues, resources, and features that all participants together (including regional relevant actors) to find out local and regional characteristics and resources for identifying local advantages and needs; (3) the core competency stage: learning by doing that sets up a small goal for a collective action based on local needs (e.g., a small scale of environmental improvement) to increase community autonomy and coherence for community's vision and to enhance the capacities for future action plans; (4) the regeneration stage: the community is capable to collaborate with relevant actors and to make an integrated plan which considers the reginal development and local needs for future annual implementation projects to achieve (COA, 2010; LIU, 2014; SWCB, 2017). During the 1st phase of rural regeneration, the empowerment programme was held by SWCB. However, the responsibility of holding the programme has shifted to local governments since the 2nd phase. In 2019, there were 2,584 rural communities participating in Rural Regeneration program, and 831 rural communities have finished the empowerment program and completed the blueprint (COA, 2019).

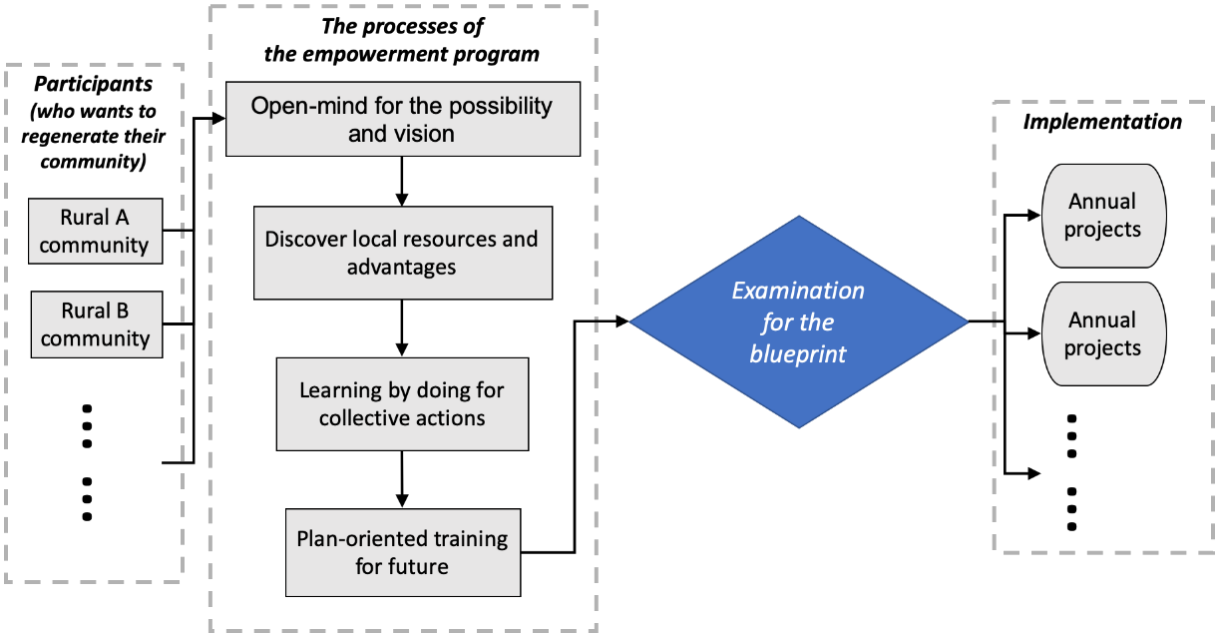

Figure 8: The processes of how rural communities participate in Rural Regeneration

After the empowerment programme, the community has to make a Rural Regeneration plan that is the blueprint of community development. Local governments and COA will examine the plan through document review and jury rating in the field. While COA approves the plan, the community will be able to propose annual projects to implement their plan and reach the community's vision.

4.2.1.2 Rural-up programme — the top-down external support-driven revitalisation intervention

The Rural-up (RUP) programme played a key role in relation to the youth return policy in rural development. The programme was first established in 2011 and held by SWCB as an experimental competition programme aiming to connect rural areas and university students to solve local problems in rural areas (KO, 2019).

The RUP programme is held annually, from March to September, and it starts with an orientation phase on university campuses from March to May. Students interested in participating in the programme have to team up with six to ten people to join the programme. Each student team has to find a rural community to work with. This can be found on the RUP website, or a team can identify a community themselves. At the same time, communities can also announce their requirements for students on the official RUP website (KO, 2019). Afterwards, each student team submits a village-stay proposal and

a self-introduction video before the application deadline. The proposal is made by the capability of the student team and how they are going to solve the selected village's problems.

There are three steps in the RUP implementation procedure. Firstly, the jury of RUP has to select the top 20 student teams through document review and presentation. Secondly, the top 20 student teams conducted their village-stay proposals in July and August. Before student teams move into villages, SWCB will provide a 3-day village-stay training as a guide or toolbox for students to survive in rural communities. Each team is given 120,000 NT dollars (approx. 3,500 Euro) to implement their proposals, and a counsellor from SWCB is appointed to provide necessary communication support between students and villagers until the end of the programme (KO, 2019). During the period of village-stay, the jury makes one visit per student team to oversee the situation and provide advice on student teams' progress, as well as to score 30% of the grade for this project. Finally, the teams' remaining scores would be given for their outcomes revealed through the final exhibitions (35%) and presentation scores (35%).

From 2011 to 2019, there were 4,400 people from 537 student teams participating in the RUP program. These students came from more than 100 university departments per year, including the departments of industrial design, agriculture, management, civic engineering, etc (SWCB, 2019).

For those student teams that want to extend their work in rural areas, the government of Taiwan also introduced a series of supplementary programmes upon the heels of RUP to support youth in rural areas, including the Rural-up II programme (RUP II) that provides an opportunity to deepen the topic from RUP by advisors' guiding; the Youth Return programme (YRP) that encourages innovative proposals from an individual youth or a team of youths to change rural areas; and the Rural Social Enterprise programme (RSEP) that supports more concrete ideas for rural social entrepreneurship.

4.2.2 Background of selected cases

This study selected four rural innovation cases from Taiwan as empirical bases. The first two cases are linked to the rural communities "Gongrong" and "Picheng" that

implemented bottom-up initiatives to solve environmental issues (SCCA, 2011; PCDA, 2011). The other two cases, namely, “SunnyRush (in Yuanli county)” and “Ririren (in Renli community)”, were driven by external top-down intervention, that is, the RUP programme that engaged with students as external actors to confront local problems. The locations of the selected cases are shown in Figure 9.

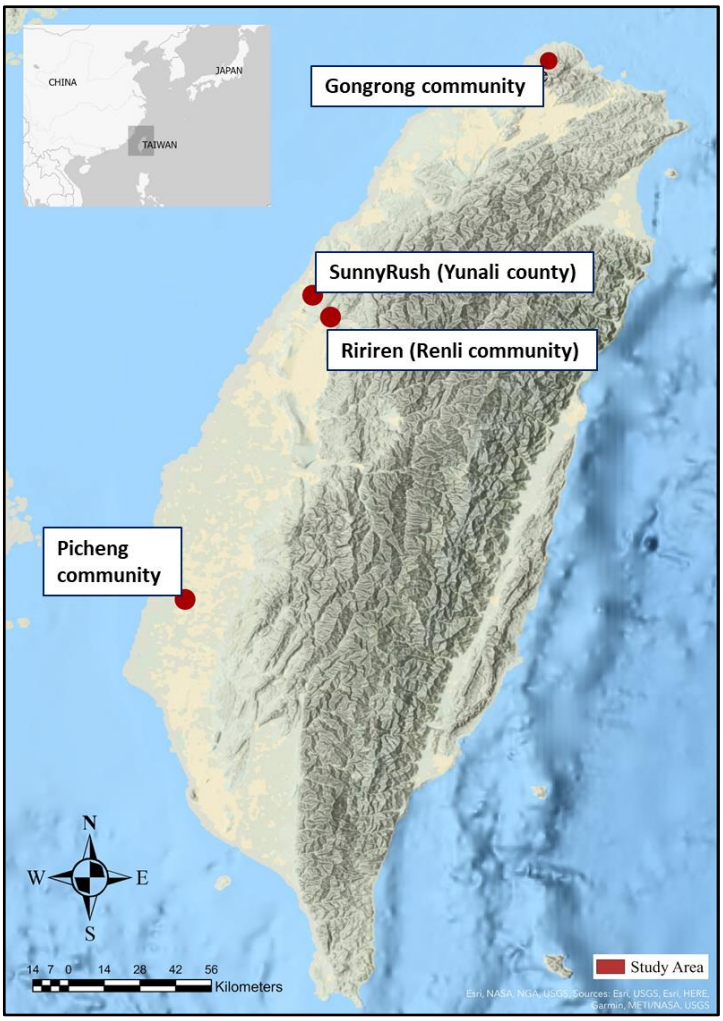

Figure 9: Study areas

4.2.2.1 Gongrong community

The first case site, the “Gongrong community”, is a scattered settlement located on the edge of the densely populated city Greater Taipei (7 million people) in Northern Taiwan. The community was developed since the first settlers immigrated from Western Fujan to the region in the 1720s. The people here farmed the lands along the contour of the shallow mountains, which created a special terraces landscape. Nowadays, there are 236

people living in an area of 210 hectares on a small mountain along the right-hand side of Balian creek, next to the Yangmingshan National Park (SCCA, 2011). Since the 1970s, the influence of urbanisation on rural depopulation is reflected in a progressive lack of labour force, which affected agriculture at large, as well as in Gongrong.

Before 2003, Gongrong had severe environmental problems, encompassing disasters caused by debris flow and landslides, misdevelopment of the hillside, and overusing herbicides that destroyed the Balian Creek ecosystem (SCCA, 2011). The situation is as Figure 10 shows. Such environmental dilemmas have been considered the causes of a series of movements and discussions on local environmental issues since 2003.

Figure 10: Environmental deteriorations in Gongrong in 2003[1]

[1] Photos from Gongrong community

In 2005, the community adopted the policy instrument "the pilot project of empowerment programme of Rural Regeneration" to inspire local people for environmental initiatives (UNU-IAS & IGES, 2018). The community then participated in the "Empowerment Programme of Rural Regeneration" and participants in the programme increased stably every year from six participants in 2005 to 118 participants in 2010. During this period, Gongrong had built its capacity from knowledge of theories and practices for further environmental movements, such as courses on the LAG operation, investigation of local resources, soil fertility recovery, plant disease and pest control, and water purification (as Figure 11 shows). Furthermore, after the community finished the empowerment programme, they completed the rural regeneration plan that was the blueprint for the community development focusing on farmland depollution and ecological restoration.

Figure 11: Empowerment programme from theory to practice[2]

The community took actions on the Balian Creek water source and environment improvement, including closing the creek to protect fish and patrolling the river regularly, adopting the simple rural sewage wastewater purifier to solve the household sewage problem, implementing crop rotation, cultivating the suppressive disease soil to improve the soil, conducted a regular inspection and land rehabilitation continuously and adopted multiple disease and insect pest control methods in an eco-friendly way. In

[2] Photos from Gongrong community

addition, the community ran a local farmers' market to support local production from eco-friendly farming, as well as collaborated with and disseminated the environmental initiative to its neighbour community, "Ankang." From 2011 to 2017, the area of land rehabilitation increased from 21.8 hectares to 52 hectares, the area of friendly farming increased from 1.3 hectares to 23 hectares, the agricultural items increased from 1 kind to 12 kinds, the professional farm population increased from 24 people to 46 people, the part-time farm population was more than 100 people.

Figure 12: Implementation of annual projects[3]

After years of efforts, agriculture became invigorated and diversified in a sustainable way in the region, and the residents have changed from misusing natural resources without awareness to working together to learning and changing with strong environmental concern and ready to face new challenges. In 2016. the community applied the "Satoyama Initiative" as the vision of moving towards a future built on the harmonious coexistence of humans and nature (UNU-IAS & IGES, 2018). The present status of Gongrong is shown in Figure 13.

[3] Photos from Gongrong community

Figure 13: The present status of Gongrong[4]

4.2.2.2 Picheng community

The second case, the “Picheng community”, is located in the Jianan Plain, southwest Taiwan, where the biggest areas suitable for agricultural production were identified; thus, the residents of Picheng mainly rely on agriculture and mainly produce miscellaneous grains, such as field corn and sorghum. Picheng was named literally by its feature "farm ponds" in the Chinese language, which characterised its formerly agricultural life for irrigation and production with 16 farm ponds. Similar to Gongrong, long-term rural depopulation since the 1970s caused a shortage of labour. The community has roughly 400 people on 418 hectares (PCDA, 2011).

[4] Photos from Gongrong community

Before 2006, due to a lack of awareness in terms of environmental protection. Those farm ponds became the places where households dump waste and rubbish. In addition, some public and idle spaces became dilapidated places of rubbish and waste. As a result, the community was flooded during the rainy season every now and then due to jammed rubbish damaging the drainage system (PCDA, 2011).

Figure 14: Polluted farm ponds and dilapidated places in Picheng[5]

The community started to change environments in 2007 by conducting government-supported projects. In 2009, Picheng took part in the pilot project of Rural Regeneration (PCDA, 2011). The community then participated in the "Empowerment Programme of Rural Regeneration" and there were 64 people completed the training programme in 2010. From 2007 to 2010, Picheng conducted a series of environmental movements, such as the LAG of Picheng operation, investigation of local resources, and filthy space cleaning (as Figure 15 shows). Furthermore, the community later finished the rural

[5] Photos from Picheng community

regeneration plan that focused on environmental improvement and protection as the vision of future development.

Figure 15: Movements to clean the filthy spaces[6]

From 2007 to 2016. the community initiated a series of actions to improve the environment. According to SWCB, there were 16 projects successfully conducted for farm ponds and dilapidated spaces cleaning, as shown in Figure 16.

Figure 16: The present status of Picheng[7]

The community has no longer been engaging in any projects or movements since 2016.

[6] Photos from Picheng community
[7] Photos from Picheng community

4.2.2.3 SunnyRush - Yuanli county

The case of SunnyRush is a rush-weaving product enterprise founded by a 2013 Rural-up programme student team in 2016. The name reveals the feature of the special rush material that requires exposure under sunshine to release its unique fragrance. In the past, such rush material was very popular in Taiwan. Particularly, the Yuanli region was known for its traditional craft of rush-weaving (see Figure 17). However, due to the transformation from an agricultural society to an industrial and commercial society, the traditional rush industry has been shrinking, and fewer and fewer craftswomen remain (PENG, 2019).

Figure 17: Traditional rush-weaving [8]

In 2013, the SunnyRush student team was recruited by RUP to use their industrial design expertise to preserve the traditional rush-weaving industry and to support local craftswomen. After the programme, the head of SunnyRush student team decided to dive into the rush-weaving industry. She spent three years working in the Yuanli region, and in 2016, she decided to run an enterprise by using a profitable business model. She started by collaborating with only four craftswomen in 2016 and expanded to 43 craftswomen in 2021.

During these years, SunnyRush created a new type of rush-weaving value chain with new rush-weaving products by empowering craftswomen to adapt to new forms of design (see Figure 18). The case of SunnyRush has provided a new solution for the

[8] Photos from SunnyRush (https://www.sunnyrush.com/)

socio-economic needs of the rural population and created a new form of collaboration in the Yuanli region. More specifically, those craftswomen were empowered through the process of collaboration. Hence, we consider it a case of successful social innovation.

Figure 18: Novel rural weaving value chain created by SunnyRush [9]

4.2.2.4 Ririren - Renli community

The other case of Ririren is an enterprise founded by the RUP student team in 2016. Ririren aims to solve agricultural waste and environmental issues in rural areas. In 2015, the Ririren student team began to support people in the village Renli during the summertime. The village is located in central Taiwan and is famous for its most important farm produce, the "grafting pear," which enables farmers to plant more profitable high-altitude pear cultivars in low-altitude regions by using grafting

[9] Photos from SunnyRush (https://www.sunnyrush.com/)

agricultural technics. However, the grafting technics produced a huge amount of agricultural waste, namely, pear stems with plastic tapes, and farmers used to deal with this waste by burning (see Figure 19).

Figure 19: Grafting pear and its wastes[10]

The Ririren student team tried to find a way to solve this environmentally harmful issue during the time of RUP. Eventually, they developed a new product, the "pear stem pen" by reusing agricultural waste with local people from the LAG. The product raised an environmental initiative in Renli village, where the LAG established a pear stem regular workshop for creating new products that would give new life to ways of treating agricultural waste (see Figure 20).

Figure 20: Pear stem pen and crafts[11]

[10] Photos from Ririren(https://www.ririren.com.tw/)
[11] Photos from Ririren(https://www.ririren.com.tw/)

The initiative even forced the district office to join the action for dealing with agricultural waste. We consider the case of Ririren as a case of social innovation in which people from the LAG make use of a regular workshop to raise local environmental awareness.

4.3 Data collection and analysis

4.3.1 Cases of Gongrong and Picheng

For the cases of Gongrong and Picheng, the initial information with regard to potential actants, historical events, and development among the two communities was collected by desk reviews that included official documents, such as Rural Regeneration policy (COA, 2012), rural regeneration plans of the two communities (i.e., the blueprint of community development) (SCCA, 2011; PCDA, 2011), and other relevant documents (UNU-IAS & IGES, 2018). Afterwards, the in-depth interviews were conducted in August of 2019 for a month in the field. The in-depth interviews included 12 people in Gongrong and ten people in Picheng as the interviewees (see Figure 21).

Figure 21: In-depth interviews conducted in August 2019

As Table 3 shows, the interviewees in Gongrong are people from Sanzhi Community Care Association, that is, the local action group (LAG), Soil and Water Conservation

Bureau (SWCB), and neighbour community "Ankang" (i.e., another local organisation) (UNU-IAS & IGES, 2018). In Picheng, the interviewees are people from Picheng Community Development Association (i.e., the LAG), SWCB, Chiayi County government (i.e., the local government), consultants, and the farmers' association (PCDA, 2011).

Table 3: Interview of Gongrong and Picheng case

	Role of Interviewees					
	LAG	SWCB	Local government	Consultants	Other local organisation	Numbers of interviewees
Gongrong	5	2	-	-	5	12
Picheng	4	2	1	2	1	10
Total						22

For the qualitative data analysis, all interviews were recorded and transcribed into word documents and organised by NVivo software. The study made use of mixed coding methods, including descriptive coding, in vivo coding, and process coding, as well as subcoding. Moreover, we consider actants' interests, obstacles, and relations to be crucial in ANT translation processes (CALLON, 1986; WOODS, 1998). Therefore, we applied Values Coding, which includes "value", "attitude", and "belief" as codes to investigate the interviewees' worldview. The use of "value" refers to the importance that we attribute to ourselves, another person, things, or ideas, for example, environmental awareness; the use of "attitude" is the way we think and feel about ourselves, another person's thing, or idea, for example, mistrust or against someone or something; and the use of "belief" is part of a system that includes our values and attitudes, plus our personal knowledge, experiences, opinions, prejudices, morals, and other interpretive perceptions of the social world, for example, "education is the key to change" (SALDAÑA, 2016: P. 131-132). These methods were used inductively in the first cycle coding to catch the main summarised messages, local people's actual phrases, and actions. For the second cycle of coding, selective coding was used to find the major categories by engaging the most significant codes from the first cycle of coding.

For further analysis, the study made use of the four moments of ANT translation to combine the coding result for actor-network constructions in the two selected cases,

including identifying the main actors (actants) in the moment of Problematisation, finding these actors' (actants) interests in the moment of Interessement, providing concrete statements for actions in the moment of Enrollment, and checking if the actors (actants) are represented in the moment of Mobilisation. The details of ANT translation will be introduced in the results section.

4.3.2 Cases of SunnyRush and Ririren

For the cases of SunnyRush and Ririren, the processes of data collection consisted of two consecutive steps. Firstly, a desk review was conducted, which included official documents to understand the historical events and the development of the two cases, including documents of Rural Regeneration policy, Rural-up programme, and others. Secondly, in-depth interviews were conducted in the field for a month in February 2021 (see Figure 22).

Figure 22: In-depth interviews conducted in February 2021

From the results of the desk review, we identified the key actors from SWCB and its Taichung branch (SWCB-TB), the Yuanli region, SunnyRush team, Renli community, and Ririren team (RCDA, 2017; PENG, 2019; KO, 2019).

The in-depth interviews included 11 interviewees from the case of SunnyRush and nine interviewees from the case of Ririren (see Table 4). The interviewees were people who had been actively involved in the development of two cases. In the case of SunnyRush, the interviewees were villagers and craftswomen from the Yuanli region, key officials from SWCB and SWCB-TB, and the founder and employees from SunnyRush. Our study period is from 2013 to 2021, that is, until the time of our fieldwork. For the Ririren case, the study analysed the period from 2015 to 2021. The interviewees include farmers and villagers from the Renli community, key officials from SWCB and SWCB-TB, and the founder of Ririren.

Table 4: Interview of SunnyRush and Ririren case

	Affiliation of Interviewees				
	Rural Dwellers (Yuanli and Renli)	SWCB	SWCB-TB	Students/ Employees	Numbers of interviewees
SunnyRush	4	2	2	3	11
Ririren	4	2	2	1	9
Total					20

All interviews were recorded and transcribed into word documents. The qualitative coding was organised by Nvivo software. For the analysis, mixed coding methods were used, including subcoding, axial coding methods, as well as descriptive coding, in vivo coding and process coding. These methods were used interactively to catch the main summarised messages, actual phrases from the local people, and actions for further categorisation (SALDAÑA, 2016). For the second cycle of coding, we considered the research questions and categorised the codes according to factors that fuel social innovation and the three phases of the innovation process (NEUMEIER 2012).

For further analysis, this study used the place-based joint learning and innovation framework in two steps: (1) Mapping the institutional arrangements among operational interfaces of the three domains in the two selected cases. (2) Analysing the operational

interfaces and interconnections among the three domains in relation to social innovation. The above two steps will be introduced in the results section.

5. Results

5.1 Objective 1: ANT analysis in community-driven Social Innovation[12]

In this section, we construct actor networks through translation and focus on how the environmental problems of Gongrong and Picheng cases are changed in community-driven rural revitalisation. Then, we observe and trace the emergence of social innovation in each case. ANT translation relies on a literary description to provide multiple perspectives and details, along with balanced voices among actants (CALLON, 1990, P. 152). Therefore, each case is described according to its development over time and condensed into moments of translation. Here, we combine the processes of "problematisation" and "interessement" because the content frequently overlaps in practice (CALLON, 1986; WOODS, 1998). At the end of this section, we summarise the key information of each translation to provide a clear overview of the selected cases' transformation and linkage with social innovation.

5.1.1 Case of Gongrong

In the Gongrong case, the environment suffered severe deterioration in the early 2000s. This deterioration had multiple causes. One was the overuse of herbicides on farmlands. A member from the LAG of Gongrong described the situation from a landscape perspective:

> The environment at that time…people used a lot of herbicides…you could see whole bare farmlands and no single grass could survive. In the end, it seems that soils could not cultivate any crops. (Member 4 from Gongrong LAG)

The massive use of herbicide was mainly to maintain arable farmlands. The government of Taiwan encouraged crop conversion and fallow land by providing subsidies starting in the 1980s to reduce rice production to maintain its price. They continued this policy

[12] The content of the cases references the publication, Chen et al. (2022).

into the late 1990s, and due to a labour force shortage in agriculture, farmers were forced to rely on herbicides to maintain arable farmlands.

Furthermore, other environmental problems were caused by local politicians and their development projects. The expansion and overuse of hillsides made the surrounding slopes unstable and caused deadly debris to flow into Balian creek and the community (SCCA, 2011). The leader described the situation at that time:

> The township council members developed the region's watershed by establishing the landfill in the valley… even allowed the Lungyen Life Service Corporation to develop the hillside. Therefore, hillside development created those soils and followed the waterways into the creek. Such problems destroyed the natural system completely. (The leader of Gongrong LAG)

In summary, the long-lasting overuse of herbicides, water resources, and hillsides led to environmental deterioration in the form of disappearances of local species and biodiversity and huge losses in terms of lives and property (SCCA, 2011). In 2003, the community began to change when a retired teacher became aware of the environmental deterioration. He perceived the residents' unawareness:

> When I came back, I saw such environmental deterioration; however, long-term residents had no feelings and awareness, just like "the boiling frog" slowly boiled alive. (The leader of Gongrong LAG)

He initiated the formation of a group of people who aimed to restore the environment to how it had been in their childhood. However, the initial group was not trusted at the beginning until an event occurred in 2004. That is, local politicians attempted to intercept and sell Balian Creek water resources (UNU-IAS & IGES, 2018). The initiator realised that the interception would destroy the local water resource system, which was the fundamental source of livelihood and farming in Gongrong. Therefore, he disseminated the information and led residents in protest against the local authority for overtaking their resources. In the end, the protesters successfully blocked such political influences (SCCA, 2011). After the event, local farmers started to become aware of the environment and trust the initial group. In the same year, they underwent empowerment

training and collaborated with the authority of rural development policy “SWCB” (UNU-IAS & IGES, 2018). Afterwards, an increasing number of residents joined their actions for environmental restoration, including farmers and residents from both Gongrong and their neighbouring community Ankang. A network with positive environmental effects was formed. As a result, the environment of Gongrong was restored through a series of community-driven environmental actions. As one outcome, the community has developed and implemented the Satoyama initiative to pursue the vision of *realising societies that are in harmony with nature*.

5.1.1.1 Problematisation and Interessement

First, we define the central problem among actants and how they associate with each other. In 2003, two forces drove environmental development in parallel. These forces were the actor-network with long-term negative environmental effects that led to environmental deterioration and a newly emerging actor-network with positive environmental effects that were driven by LAG’s revitalisation actions. For the actor-network with negative environmental effects, the related actants were:

(1) The environment: defined as a set of farmlands, water resources, hillsides, and biodiversity.

(2) Local politicians: defined as actors who could influence local development projects.

(3) Development projects: defined as local development initiatives that could develop water resources and hillsides in Gongrong and could be influenced by local politicians.

(4) Fallow subsidy: defined as a subsidy that aimed to encourage farmers to keep arable farmlands uncultivated.

(5) Farmers (non-eco): defined as farmers who relied on herbicides.

(6) Herbicides: defined as chemical substances that were used by the farmers to control unwanted plants (Figure 23 left side).

ANT tends to use active voices to describe equality between human and nonhuman actants (CALLON, 1986). In the Gongrong case, the nonhuman actant "environment" was at the centre of the translation processes. Although the environment is not itself actively aiming at deterioration, it does play an active role in providing free resources and has its mechanism for other actants to use. When resources are overused, residents are able to feel the effects of environmental deterioration. Hence, acting in the actants' interests, the local politicians could see the benefits of developing the hillside or water resources; the fallow subsidy could have made it possible to maintain arable farmlands if they had continued approving the subsidy; the farmers relied on herbicides to cope with the shortage of labour to obtain the subsidy. The obligatory passage point was that actants believed they could benefit and achieve their interests by using resources regardless of the consequences (OPP 1 of Gongrong). The actor-network with negative environmental effects is illustrated on the left side of Figure 23.

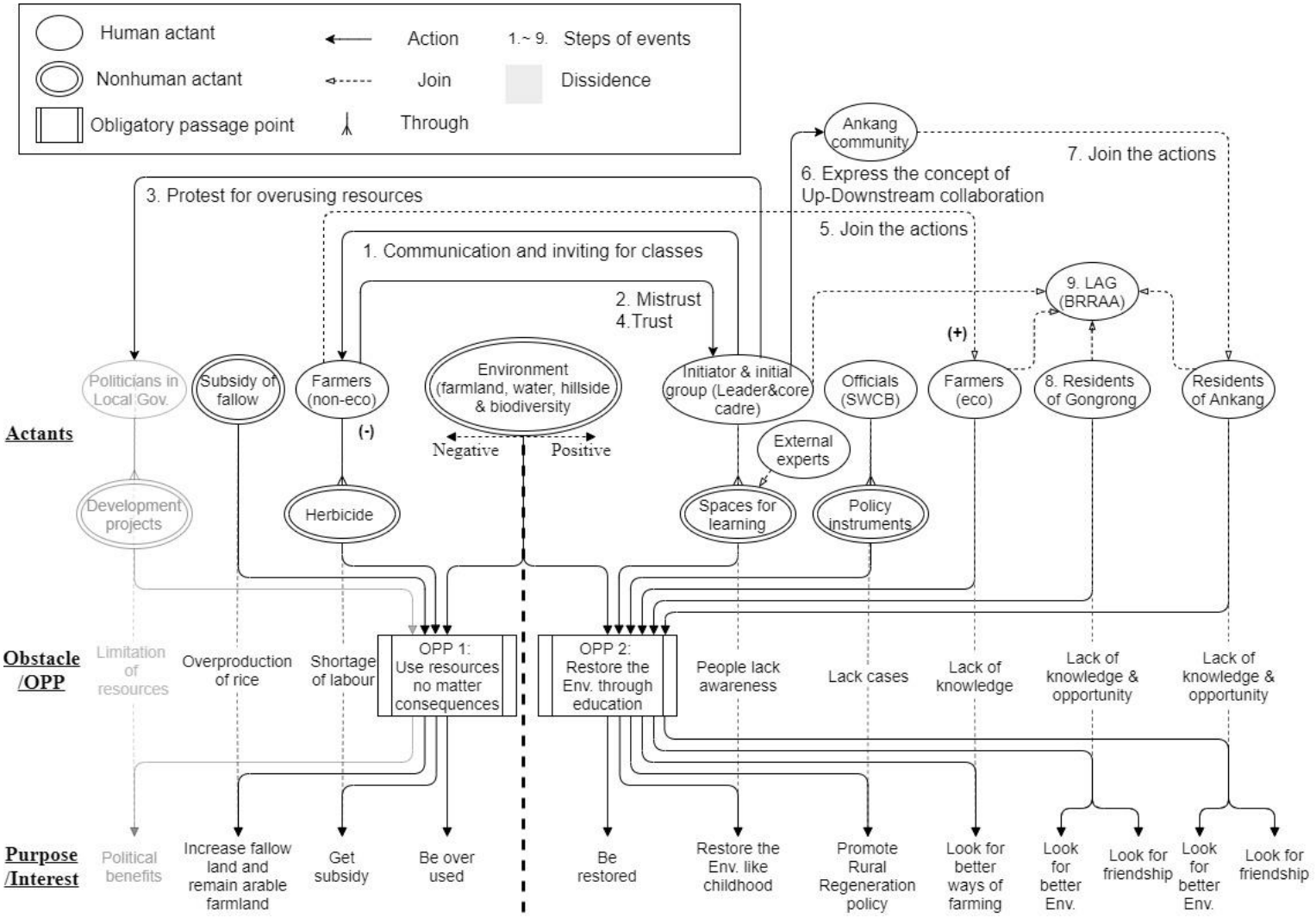

Figure 23: Actor-networks of Gongrong (Beginning to change)

On the right side of Figure 23 is the actor-network with positive environmental effects. The actants were:

(1) The environment: defined as above.

(2) The initiator and initial group (leader and core cadre): defined as the retired teacher who became the leader and his friends who became the core cadre (the leader's strong followers) that led the LAG.

(3) Spaces for learning: defined as empowerment programmes, regular Friday meetings since 2011 and other educational courses that were used by the leader and the core cadre.

(4) Officials from SWCB: defined as government officials from SWCB.

(5) Policy instruments: defined as rural development projects from the Rural Regeneration policy that were conducted by SWCB officials.

(6) Farmers (eco): defined as farmers who wanted to apply eco-friendly farming practices.

(7) Residents (Gongrong): defined as people who lived in Gongrong.

(8) Residents (Ankang): defined as people who lived in Ankang.

In this actor-network, the positive environmental effects were driven by actants who took action to restore the environment through education. To examine their interests, the initiator and the initial group wanted to change the situation. They believed education was the key to restoring the environment because local residents lacked awareness. At that time, the officials from SWCB wanted to promote the Rural Regeneration policy (pilot programme) and needed participants for the programme. Therefore, they could achieve this goal if they supported the action. Some farmers were convinced by them and were willing to learn better ways of farming. Other residents from Gongrong and Ankang participated in this actor-network to pursue better environmental practices, and some of them were looking for friendships. The obligatory passage point in this actor-network was that actants believed they could benefit and achieve their interests by restoring the environment through education (OPP 2 of Gongrong).

5.1.1.2 Enrolment

This moment provides a series of concrete statements on and interpretations of the role distribution and coordination among actants identified from previous moments. The promotion of empowerment training for rural regeneration by officials of SWCB coincided with the initial group's belief that education was the key to change. Therefore, the group decided to join the empowerment training in 2004. At that time, they had difficulties convincing other local farmers who overused herbicides to join their action (Step 1 in Figure 23). Local farmers mistrusted the new group and were suspicious that the initial group was active for political purposes (Step 2 in Figure 23). This was the state of affairs until the initial group led farmers and residents in the protest event, which ended the local politicians' influence (dissidence) (Step 3 in Figure 23). Then, some farmers started trying to participate in the training and looking for better farming methods (Steps 4 and 5 in Figure 23). From 2005 to 2010, the community conducted empowerment training. Again, the training course's participation was low in the beginning. In 2005, 20 people registered for the training, but only six people eventually completed it. Later, the initial group took another approach to mobilise locals. Instead of using sophisticated course contents and telling participants what to do to decrease the use of pesticides and herbicides, they asked participants what training courses they would be interested in. The new courses provided knowledge about how to cultivate better quality crops or fruit in an alternative and eco-friendly way. In 2010, there were more than 100 participants (UNU-IAS & IGES, 2018). In particular, the initiator did not only tell others what to do. In addition, he always set an example to show that it is possible to change. One official of SWCB stated:

> When they finished some courses, they learned many new ways of farming. However, other people tend to sit on the fence because of the fear of failure. The initiator was always the first one trying to show others how the new ways could be. (SWCB official 1)

Furthermore, the initiator also expressed the importance of protecting the Balian creek to other residents in Gongrong and even their neighbour group in Ankang (Step 6 in Figure 23). Residents from both Ankang and Gongrong joined the action (Steps 7 and 8

in Figure 23). Some of them aimed to protect the environment or look for friendships. The term "friendship" was used several times during the interviews. One resident stated:

> In the past, people got together only for important events such as elections… But since the training began, activities and courses created more opportunities for meeting each other. Now sometimes we meet each other three times per week. Everybody feels so close and knows each other, just like brothers and sisters. (Resident 4 from Ankang)

In 2008, the enlarged group, which was composed of the initial group along with farmers, residents, and Ankang people, established the Balian Rural Regeneration Advancement Association (BRRAA) as a LAG (Step 9 in Figure 23). In addition, the initiator became the leader, with 25 people as the core cadre. They subsequently undertook a series of community actions to restore the environment.

5.1.1.3 Mobilisation

The moment of mobilisation should ensure that the spokespeople of the actor-networks can represent both the social and natural "realities." For the actor-network of OPP 1 (Negative environmental effects), the leader and core cadre as the spokespeople represented the environment, local politicians, fallow subsidy, and farmers (non-eco) and confirmed that environmental deterioration had occurred from historical photos of the landscape, the spokespeople's experiences, and important protest events (UNU-IAS & IGES, 2018). For the actor-network of OPP 2 (Positive environmental effects), the leader and core cadre represented themselves, and the environment, farmers (eco), residents (of both Gongrong and Ankang), and SWCB officials represented themselves. The mobilisation of the actor-network of OPP2 was confirmed by several actions, including the following: (1) the LAG was formed and established, (2) the habit of holding regular Friday meetings for learning and exchange was developed in 2011, (3) a self-organised patrol was formed for the Balian creek to protect its waterways, (4) a farmers market was operated in 2012 to support eco-friendly production and (5) training courses were continued to promote eco-friendly farming. The number of training participants grew from six to more than 118 from 2005 to 2010. Moreover, they restored abandoned farmland such that the cultivated land area increased from 21 ha in 2011 to

52 ha in 2018, the eco-friendly farming area increased from 1.3 ha in 2011 to 32 ha in 2018, and the once-vanishing biodiversity flourished again with more species, such as crab, fish, and frog species. (UNU-IAS & IGES, 2018).

Last but not least, in 2016, the common goal in the Gongrong community was changed when officials from SWCB presented a documentary of the Satoyama initiative to the leader. He shared the concept with the other LAG members and held a festival, namely, the Satoyama Festival, to broaden the initiative. The purpose and interest of the leader and the core cadre were not simply to restore the environment but also to revitalise the community. In time, all involved community members became familiar with the core concept and developed a common vision. They adjusted their initial approach to pursue the core value of the Satoyama initiative, "a society in harmony with nature." OPP 2 was transformed to OPP3, as actants eventually believed that pursuing the Satoyama initiative could better achieve their interests. That is, the focus was no longer just on environmental concerns but included consideration of socioecological production landscapes in which resources were used sustainably (UNU-IAS & IGES, 2018). The Satoyama Festival has become the most important annual event since 2016. Statistical data and information on events were collected in the field and, in the end, expressed by spokespeople. The present status of Gongrong is shown in Figure 24.

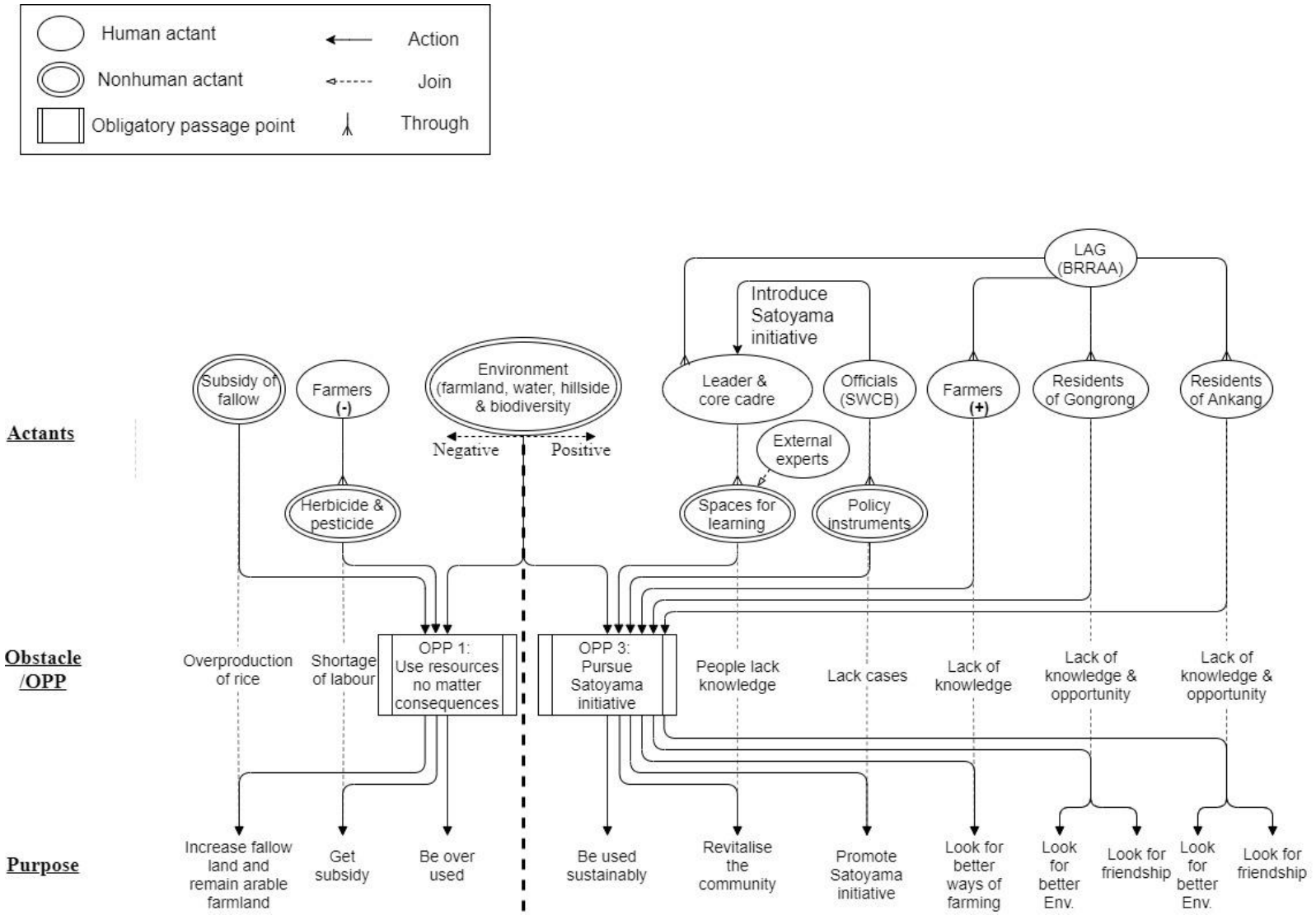

Figure 24: Actor-networks of Gongrong (present status)

5.1.2 Case of Picheng

In approximately 2006, the Picheng community suffered from severe environmental problems, including highly polluted farm ponds and dilapidated spaces. Residents without any environmental awareness dealt with waste and rubbish by dumping them into farm ponds and unused spaces (PCDA, 2011). A member of the LAG of Picheng described the pollution situation:

> Everyone was just dumping, such as kitchen waste, dead animal bodies like chickens or ducks, and even plastic bags. People just dumped into the farm ponds; they had no awareness that this would pollute the environment. (Member 3 from the LAG of Picheng)

Apart from this, agriculture also played a part in environmental issues since it was the most critical pillar of the local economy. In 2008, the "Small Landlords and Big Tenants (SLBT)" policy was officially established to encourage elderly farmers or farmers who were unwilling to cultivate to rent out their farmland to professional tenants. The objective was to address the lack of young farmers and the lack of economic return from scattered and small-scale farmlands (SU & HSU, 2015). In addition, a subsidy policy for field corn was introduced to encourage big tenants to cultivate field corn conventionally on a large scale. This policy aimed to develop the region as an exceptional agricultural enterprise district for field corn production. Therefore, farmers preferred to engage in conventional farming in the community (PCDA, 2011).

In 2007, a change began largely due to an initiator, namely, a retired piano tuner who believed that the environment could be improved. The initiator and some residents established the Picheng community development association (PCDA) as a LAG in 2007 (PCDA, 2011), and the initiator became the leader. At this time, the LAG began to collaborate with SWCB and consultants to improve the environment. Local environmental projects were also taken part in the actions. The LAG conducted a series of environmental projects, and as a result, the filthy farm ponds and idle spaces were improved. However, Picheng stopped proposing projects in 2016.

5.1.2.1 Problematisation and Interessement

In 2007, two forces drove environmental development. One was the actor-network with the negative environmental effects of long-term misbehaviour and the destructive method of farming. The other was a new actor-network with positive environmental effects that was led by the LAG's revitalisation actions. For the network with negative effects, the actants were:

(1) The environment: defined as a set of farm ponds, idle spaces, and farmlands.

(2) Local residents: defined as residents who tended to dump rubbish into farm ponds and idle spaces. Some of them were farmers.

(3) Local farmers: defined as farmers who relied on conventional farming.

(4) Herbicides and pesticides: defined as chemical substances that were used by farmers for conventional farming.

(5) SLBT and field corn subsidy: defined as two policy instruments that encouraged the community to pursue field corn production in a conventional way.

Here, similar to Gongrong, the nonhuman actant "environment" provided free resources and spaces and had its mechanism for other actants to use; thus, its development and interests depended on how the actants used them. Hence, the environment was polluted due to these actants. For human actants, the SLBT and field corn subsidy could have achieved their goal of increasing field corn production if the subsidy had continued to be approved for farmers. The farmers could acquire a stable income from the subsidy if they cultivated their field corn in a conventional way. The local residents wanted to deal with their waste and rubbish, and farm ponds and idle spaces were an easy option for them. The obligatory passage point is that actants believed they could benefit and reach their interests by polluting the environment regardless of the consequences (OPP 1 of Picheng). The actor-network with negative environmental effects is illustrated on the left side of Figure 25.

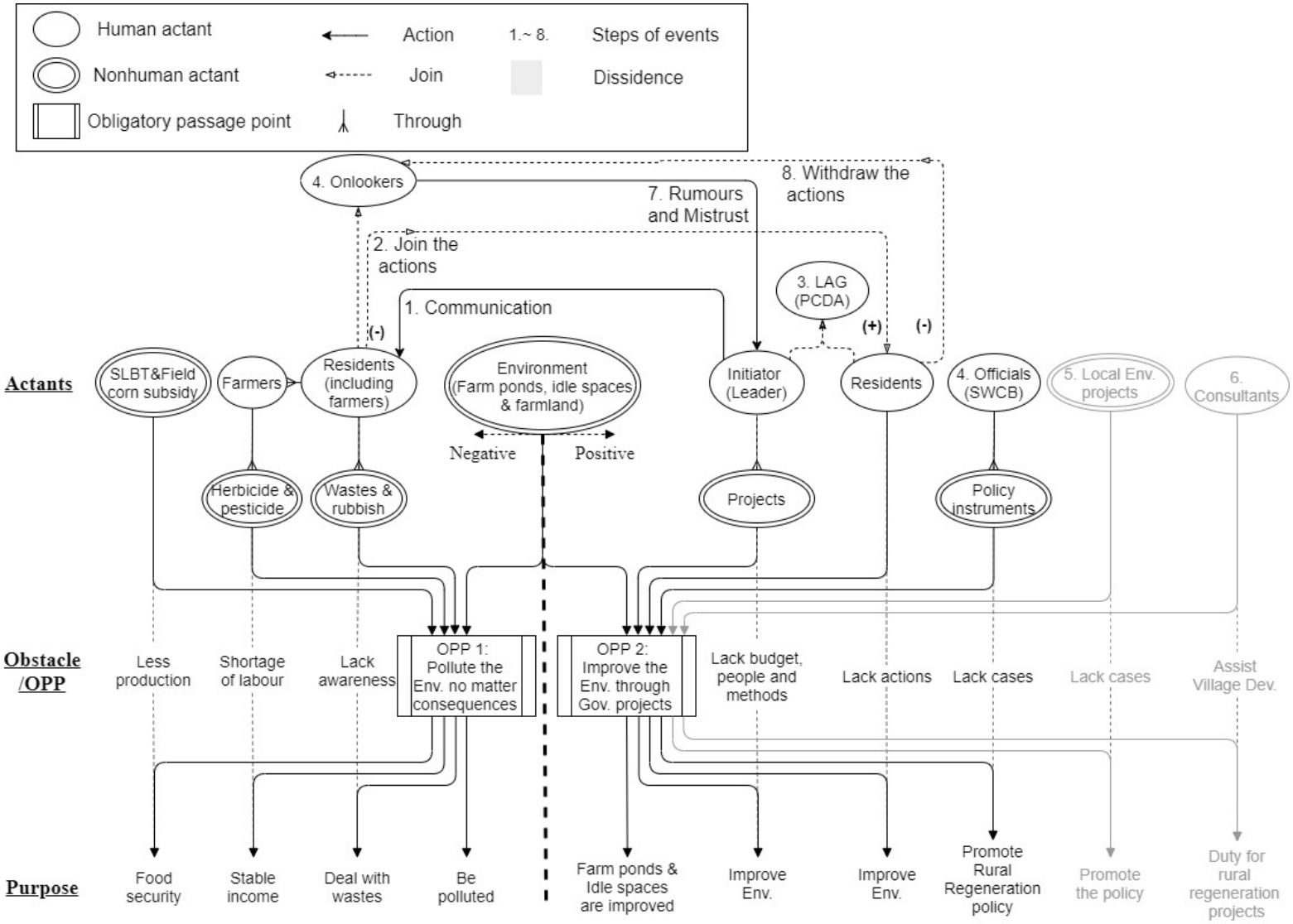

Figure 25: Actor networks of Picheng (Beginning to change)

On the right side of Figure 25 is the actor-network with positive environmental effects. The actants were:

(1) The environment: defined as above.

(2) Initiator (leader): defined as the retired piano tuner who became the leader of the LAG.

(3) Projects: defined as implementation projects for environmental improvement that were initiated by the leader.

(4) Residents: defined as people who lived in Picheng.

(5) Officials: defined as government officials from SWCB.

(6) Policy instruments: defined as rural development projects from the Rural Regeneration policy that were provided by SWCB officials.

(7) Local environmental projects: defined as environmental projects that were supported by the local government.

(8) Consultants: defined as advisors who were introduced by SWCB to support rural development projects.

The positive environmental effects were driven by the actants who took action to improve the environment through government projects. The initiator wanted to change the situation but was limited by a lack of budget, people and methods. He realised it was critical to improve the environment through government projects. Some residents agreed with the purpose of improving the environment, and they could see the benefits of joining the action. At the same time, officials from SWCB wanted to promote the Rural Regeneration policy (pilot programme) but lacked participants. Therefore, they provided policy instruments to support the action. In addition, consultants joined the action to fulfil their obligation to support rural regeneration projects. Finally, some local environmental projects were offered to the LAG to take environmental action. The obligatory passage point in this actor-network is that actants believed they could benefit and achieve their interests by improving the environment through government projects (OPP 2 of Picheng).

5.1.2.2 Enrollment

The enrollment moment aims to provide more concrete statements. Let us turn back to 2007: Farmers adopted conventional farming for field corn cultivation under the application of the SLBT and field corn subsidy. Residents kept dumping waste and rubbish into farm ponds and idle spaces. As a consequence, the environment was polluted. Therefore, the retired tuner wanted to reduce the pollution of farm ponds and idle spaces, and he realised that he needed support from other residents to establish an organisation that could connect public resources and local problems. Therefore, he talked to local residents about taking action and improving the environment (Step 1 of Figure 25). Some residents were convinced to join the actions (Step 2 of Figure 25), and with the initiator, they established the LAG and connected it with public resources (Step 3 of Figure 25), including both the Rural Regeneration programme and local environmental projects (Step 4 of Figure 25). However, other residents took a step back to become onlookers (Step 5 of Figure 25). At the same time, the officials from SWCB believed that the LAG had the potential to implement projects for rural regeneration. Therefore, they supported the LAG with policy instruments and provided consultants to assist with the community's development enrolled in the network (Step 6 of Figure 25). However, due to a lack of trust in the LAG, rumours were spread that the LAG members were motivated by personal benefits (Step 7 of Figure 25). According to the leader:

> When it comes to change…People said, "This is not your business; I can dump whatever I want" …When the volunteers were cleaning rubbish, some people had the idea that "They (people from LAG) use exactly this way for making money..." such voices came out (The leader of Picheng LAG)

These voices revealed mistrust in the community and had the effect of isolating the LAG. As a result, some residents decided to withdraw from the activities (Step 8 of Figure 25). In addition, the low numbers of active residents and the low level of continuity in their commitments influenced the change process, especially for the subsequent maintenance of the improved environment. A consultant stated:

> The core cadre…is few…other members of LAG are too old…the others are either too old or too young; it is hard to see people from other ages. (Consultant 1 of Picheng).

The leader explained that the residents' older age was an important impediment:

> The residents are already 80 to 90 years old…what are they looking for? They only need a stable life… they do not have time to change…my mother is already 90 years old…she told me "Every day when I open my eyes, I am glad to see the sunshine." So, what do you expect her to do? (The leader from Picheng LAG).

Despite the community's lack of trust and outspoken resistance, the LAG still implemented a series of environmental projects from 2011 to 2016. Various farm ponds and dilapidated spaces were successfully improved.

5.1.2.3 Mobilisation

For the actor-network of OPP 1 (Negative environmental effects), the leader was the spokesman for the environment, and the local residents represented themselves, local farmers, the SLBT, and the field corn subsidy. The environmental pollution was confirmed by local residents' experiences, historical photos, and documents (PCDA, 2011) to be a result of filthy farm ponds from dumping, idle spaces, and conventional field corn production. This led to the mobilisation of the actor-network of OPP 2 (Positive environmental effects). The leader, as the spokesman, represented himself, the environment, and local environmental projects. SWCB officials, residents, and consultants represented themselves. The mobilisation of the actor-network of OPP2 was confirmed by several actions, including the official establishment of the LAG in 2007 and the implementation of a total of 16 projects from 2011 to 2016, including the clean-up of two main farm ponds and the reconstruction and clean-up of seven filthy spaces, which were transformed for public leisure purposes. The filthy spaces and polluted farm ponds were successfully cleaned and improved. While there were 64 official members of the LAG, the project's implementation relied mainly on the leader and a few followers. In addition, the initiatives of the community to change agriculture and local industry failed. Agriculture in Picheng is still driven by conventional farming.

In 2016, Picheng stopped proposing projects. The network with positive environmental effects encountered dissidence among actants of the consultants because rural development projects had ended, and the local environmental projects also left the network because the LAG stopped applying. Although the officials from SWCB still encouraged the LAG to act, only the leader and a few followers could manage and maintain the improved environment. OPP 2 shifted to OPP3 that the actants' belief that maintaining the environment and waiting for people to change was the best way for now. The various successful actions, including establishing the LAG, implementing environmental projects, and tangible improvement in the field, were recorded in the official documents and described by the spokespeople. The present status of Picheng is shown in Figure 26.

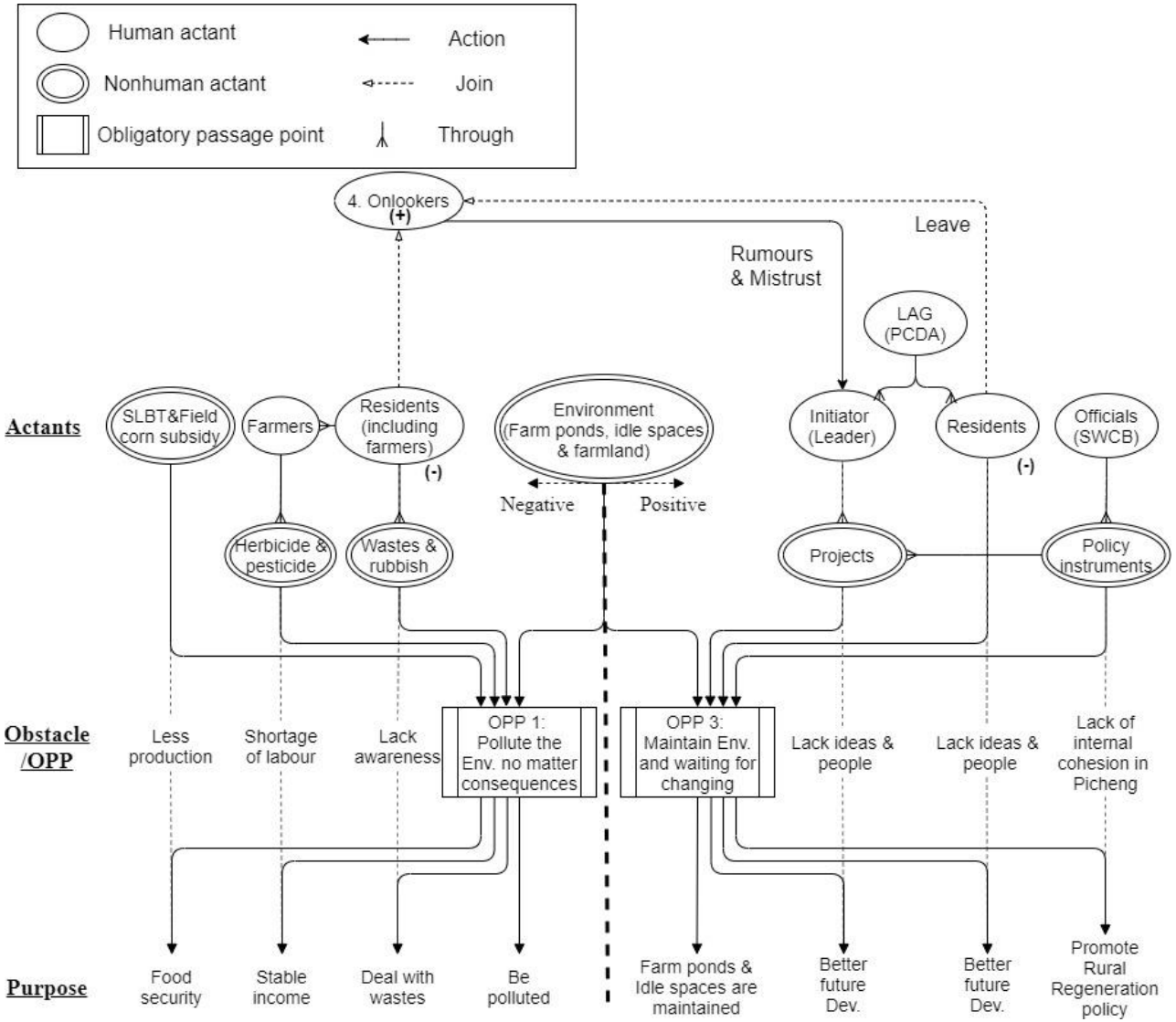

Figure 26: Actor-networks of Picheng (present status)

5.1.3 Cross case comparison

The preceding sections describe the ANT translation of community-driven revitalisation practices in Gongrong and Picheng communities. Table 5 and Table 6 summarise our findings regarding the events, actants, and OPPs in the four time phases of the analytical framework: the initial status, beginning to change, taking actions, and the present status. We observed three similarities between the two cases: first, the same types of actants were repeatedly identified, such as residents, farmers, leaders and members of the LAGs, officials, policies, subsidies, and the environment; second, the patterns of forming the OPP2 were similar, which began with individual actors and transitioned to a group of actors with support from external officials; and third, in both cases, the OPP1 did not completely disappear but persisted with various degrees of effects. We also observed three main differences between the two cases: first, the solutions from the LAGs were different, which shaped the actor networks of OPP2; that is, the solution in the first case focused on education, whereas that in the other case focused on government projects; second, the processes of acting among actants were different, that is, the process in the first case encouraged more actant participation, whereas that in the other focused on the tangible outcomes with less civic engagement; third, the outcomes of the two cases were different, that is, in the first case, more intangible changes were realised, whereas in the second case, tangible improvements were realised. Another aspect that merits discussion is the continuity of the actor-networks of OPP2: in one case, it was possible to maintain the ties of the network and even continue with new initiatives, while the network in the other case was shrinking.

Furthermore, we observed that Gongrong managed to build a community group (the core cadre) that continues to be actively engaged in local development. They are guided by a long-term vision and philosophy and are ready to address new issues when needed (e.g., the transformation from restoring the environment to the Satoyama initiative). In the other case, the Picheng group fell apart once their initial goal was achieved with tangible improvements, including changes in farm ponds and filthy spaces. Thus, in the Gongrong case, civic engagement innovated society by producing both tangible outcomes (e.g., biodiversity, farmlands, and creek) and intangible outcomes (e.g., the

transformation of farming from conventional to eco-friendly and the pursuit of the Satoyama initiative). On this basis, we consider the Gongrong case to be a successful example of social innovation. In the Picheng case, the process of social innovation was interrupted and put on hold. Even though the farm ponds and filthy spaces were improved, it will be difficult for the remaining active residents to realise any further development, as the engagement was not institutionalised. Apparently, no intangible social results, such as social learning or collective action, were achieved.

Table 5: Summary of actor-networks by time phase in Gongrong

Time phase	Initial status	Beginning to change	Taking actions	Present status
Events	Policy-driven fallow subsidy Hillside development projects Herbicide overuse on landscape	Protest for selling water resources Increasing number of participants in the training course (from 6 in 2005 to more than 100 in 2010) Regular Friday meetings since 2011	Self-organised patrol Eco-friendly farmland area increased from 1.3 to 32 ha (2011-2018) Brought back once-vanishing biodiversity	Yearly Satoyama Festival An example of the International Partnership for the Satoyama Initiative (IPSI)
Actants	**Actants-OPP 1:** Nonhuman: the environment (hillside, farmlands, water resources, and biodiversity), fallow subsidy, herbicide, and development projects. Human: farmers (non-eco) & politicians	**Actants-OPP 1:** Nonhuman: the environment, fallow subsidy, herbicide, and development projects. Human: farmers (non-eco) **Actants-OPP 2:** Nonhuman: the environment, spaces for learning, and policy instruments Human: Initiator & initial group, SWCB officials, eco-farmers, residents of Gongrong, and residents of Ankang	**Actants-OPP 1:** Nonhuman: the environment, fallow subsidy, herbicide, and development projects. Human: farmers (non-eco) (-) **Actants-OPP 2:** Nonhuman: the environment, spaces for learning, and policy instruments Human: Leader & core cadre, SWCB officials, eco-farmers (+), residents of Gongrong, and residents of Ankang	**Actants-OPP 1:** as on the left **Actants-OPP 2:** Nonhuman: the environment, spaces for learning, and policy instruments Human: Leader & core cadre, SWCB officials, eco-farmers (+), residents of Gongrong, and residents of Ankang
OPP	**OPP 1:** actants believe that the benefits from overusing resources are more important than the effects	**OPP 1:** as on the left **OPP 2:** actants believe that the environment can be restored through education.	as on the left	**OPP 1:** as on the left **OPP 2:** actants believe that pursuing the Satoyama initiative is their common goal

Table 6: Summary of actor networks by time phase in Picheng

Time phase	Initial status	Beginning to change	Taking actions	Present status
Events	Policy-driven subsidy (SLBT & field corn) Filthy farm ponds and spaces	LAG was established in 2007 Rumours	16 completed projects that improved farm ponds & idle spaces, Lack of a core cadre and people, Rumours	Stopped acting in 2016 Rumours
Actants	**Actants-OPP 1:** Nonhuman: the environment (farm ponds, farmlands, and idle spaces), SLBT & field corn subsidy, herbicides & pesticides, and waste & rubbish. Human: residents & farmers (non-eco)	**Actants-OPP 1:** Nonhuman: the environment (farm ponds, farmlands, and idle spaces), SLBT & field corn subsidy, herbicides & pesticides, and waste & rubbish. Human: residents & farmers (non-eco) **Actants-OPP 2:** Nonhuman: the environment (farm ponds & idle spaces), projects, local environmental projects, and policy instruments Human: leader, residents, SWCB officials & consultants	as the left	**Actants-OPP 1:** as on the left **Actants-OPP 2:** Nonhuman: the environment (farm ponds & idle spaces), projects, and policy instruments Human: leader, residents (-), and SWCB officials
OPP	**OPP 1:** actants believe that they can benefit and reach their interests by polluting the environment regardless of the consequences	**OPP 1:** as on the left **OPP 2:** actants believe they can benefit and reach their interests by improving the environment through government projects	as on the left	**OPP 1:** as on the left **OPP 2:** actants believe that maintaining the environment and waiting for people to change are their common goals

5.2 Objective 2: Actor-oriented approach in external support-driven Social Innovation

This section illustrates the results of SunnyRush and Ririren following with the two steps of analysis from the place-based joint learning framework, including mapping the institutional arrangements of the two selected cases and analysing the operational interfaces and interconnections among the three domains in relation to the model of social innovation adapted from NEUMEIER (2012), as below shows.

5.2.1 Case of SunnyRush

5.2.1.1 Mapping the interaction and the creation of institutional arrangements among the three domains

The story of SunnyRush began when the SunnyRush student team participated in the 3rd RUP in 2013. This was when they initiated the revitalisation of the traditional rush-weaving industry by using their industrial design profession to preserve the local culture and support craftswomen.

Key actors in the case of SunnyRush can be allocated to the three domains rural area, public administration, and knowledge support structure. For the domain of rural area, the Yuanli region is the physical place where most of the interaction among the various actors takes place. These key rural actors were people from Local Action Groups (LAGs) aiming to preserve and revitalise the rush-weaving industry, including a local rush-weaving association, namely “Taiwan Yuan-Li Handiwork Association (TYHA)” and other local community associations. The members of TYHA and LAGs and even craftswomen were involved, and all of these key actors somehow overlapped in reality. For the domain of public administration, the main actors are officials from SWCB, SWCB-TB, and MOC. They were key people in charge of rural development and cultural heritage preservation-related policies, programmes, projects, and budgets. For the domain of knowledge support structure, the main actors were people from the National United University (NUU) and people from SunnyRush.

The Yuanli region had collaborated with various public sector groups before the SunnyRush student team participated in RUP. The collaborations mainly had to do with

Rural Regeneration policy and cultural heritage preservation-related policies, such as an empowerment programme, rural regeneration plans, annual implementing projects and consulting, traditional culture and craft, and community-building programmes. When the SunnyRush student team was studying in the department of industrial design at NUU, they had previously established contacts with the rush-weaving industry in the Yuanli region. As a result, one of the students decided to make the team and join RUP. The student team realised the dilemmas of the rush-weaving industry and recognised the disrespect of craftswomen during the RUP programme. Hence, they used their industrial design background to contribute to the traditional rush-weaving and designed, produced, and promoted various products, such as slippers, masks, and even smartphone cases. They eventually got awards for their creative ideas. Thereupon, the head of the student team decided to continue to work in the community when she graduated. On the one hand, she wanted to let more people approve of the works of craftswomen. As she mentioned:

> In the beginning, when I was in the community selling the rush-weaving products, you could always see the reaction was so direct. Such as 'Why is it so expensive?' or they just showed it on their face. It made me so sad, and actually, there was always a thought in my mind: 'Rush-weaving should be respected, and I have to prove it to other people. (The founder of SunnyRush)

On the other hand, the leader of TYHA offered a job opportunity for her. At the same time, her supervisor from the university also encouraged her. Looking back, she argued:

> Originally, I thought that the rush-weaving was not bad to give a shot, but he (the leader of TYHA) did offer me a job opportunity. That was about his trust. You just feel if you are not the person to do it, who will do it? So, I should give myself a chance. (The founder of SunnyRush)

However, two years later, she realised that the problem of reliance on public funds was rooted in the non-profit association TYHA. The leader of TYHA and her discussed running a profitable enterprise to solve the problem. However, the leader of TYHA suddenly died due to illness, and she realised that she could not do anything without the leader of TYHA to make any progress or push change in the local areas and TYHA due

to mistrusting the direction of running a profitable enterprise. An official from SWCB pointed out the situation at that time:

> In the past, the leader of TYHA could accept her ideas. However, when he passed away, other people in TYHA could not accept her thoughts. She was considered an outsider, and suddenly there was no communication role like the leader of TYHA. (SWCB official 1)

Later on, she withdrew from the TYHA and ran the SunnyRush enterprise alone in the Yuanli region in 2016. In the beginning, only four craftswomen were collaborating with SunnyRush enterprise, which at the same time needed to create a profitable market and expand its clients in order to provide a better income for the craftswomen. They spent time communicating with craftswomen to adapt new designs to develop new rush-weaving products. A member of SunnyRush mentioned the communication process could be challenging:

> During the communication, they (craftswomen) did not as you told them what to do. They used to do it in their own way and tended to reject new products. (Member of SunnyRush 3)

On the other hand, from the perspective of craftswomen, revealing the process of adaptation can be very stressful:

> Even though you know how to do rush-weaving, those products are completely new, and you must do some research and preparation. Sometimes when they give me a new design, I have a sleeping disorder for three days due to my mind trying to find a way to make it. (Craftswomen 1)

However, SunnyRush kept finding ways to communicate with craftswomen to develop and produce new products. Eventually, good relationships were built with craftswomen so that they could pursue their goals of preserving rush-weaving culture and supporting craftswomen. One of the craftswomen even found her purpose and happiness during the collaboration, as she mentioned:

> They kept designing new products, and we also had to keep changing and learning. I felt very fulfiled and happy when they kept developing new products, and I was capable of realising them. (Craftswomen 2)

At the same time, the enterprise was under a lot of pressure to sell and cover its debts, although it had been supported by a series of programmes, including RUP II, YRP, and RSEP (PENG 2019). The SunnyRush model of the rush-weaving industry provides a way to achieve the founder's initial goals and reveals rural social innovation features in solving local traditional cultural needs by creating new collaboration among craftswomen, members of SunnyRush, and officials of SWCB. As the founder pointed out about the vision of SunnyRush:

> I think the future of SunnyRush is becoming a platform. We are not only connecting craftswomen and rush farmers but also other processors and sales channels. I would say this makes this value chain complete and healthy. (The founder of SunnyRush)

According to our qualitative data from the case of SunnyRush, we mapped its institutional arrangements among the three domains, as Figure 27 shows. The next section will analyse it from the perspective of operational interfaces in relation to the three phases of social innovation.

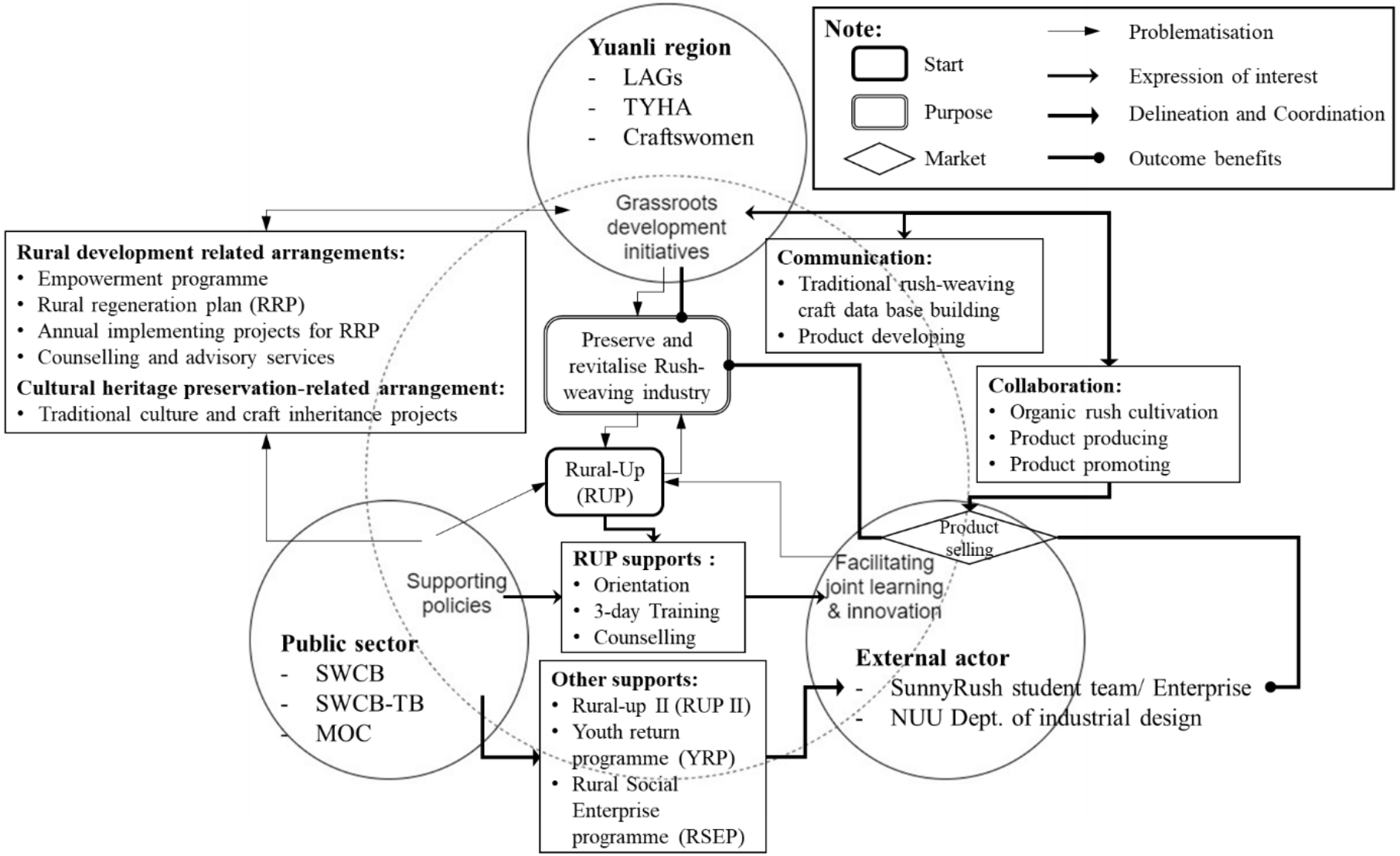

Figure 27: The operational interfaces of SunnyRush

5.2.1.2 Analysing the operational interfaces among the three domains in relation to social innovation

This section explains Figure 27 and focuses on the interaction of operational interfaces among the three domains during the three phases of social innovation, including problematisation, expression of interest and delineation and coordination (NEUMEIER, 2012: P. 57), as follows:

Problematisation: this is a transition moment driven by an initial impetus that motivates the initial actors to identify the problem and decide to change. Initially, the grassroots development initiatives aimed to preserve and revitalise the rush-weaving industry. We observe that the interconnection of operational interfaces between the Yuanli region and the public administration was driven by rural development and cultural heritage preservation-related programmes. The interconnection of operational interfaces between the Yuanli region and the SunnyRush student team was linked by the consultations between TYHA and NUU. In the beginning, there was no interconnection of operational interfaces between the public administration and the SunnyRush student team. However, the interconnections started to change when the SunnyRush student team and TYHA both realised that RUP might be a great opportunity for them. This led them to participate in RUP online recruitment, orientation, and the 3-day training workshop in the convergent interconnection of operational interfaces among the three domains.

Expression of interest: this phase occurs when the initial actors try to convince or persuade other actors to see a certain advantage when they join. That is, in our case, the SunnyRush student team tried to convince craftswomen to adopt new designs and new ways for the rush-weaving industry. We observe that communication played the main role in the interconnection of operational interface between the Yuanli region and the SunnyRush student team. On the one hand, the trust built between local actors and external actors could be vulnerable in some situations. On the other hand, the role between local and external actors was blurred since we considered students as helpers in rural areas. However, our case shows that help from TYHA was also critical for students to implement their ideas during the communication process.

Delineation and Coordination: from our case, we can observe that the change in the interconnection of operational interfaces between the Yuanli region and the SunnyRush student team realised mainly in database building, organic rush cultivation, product producing, and promoting. Moreover, the role of SWCB and SWCB-TB was to provide programmes to support students in overcoming the dilemma of debt in the enterprise.

Overall, we observe that the interconnection of operational interfaces between the rural area and public administration remained the same during the whole process of social innovation as in the initial stage. The RUP as the starter triggered the change in the interconnection of operational interfaces among the three domains. The implementation of the change mainly happened in the interconnection of operational interfaces between the rural area and the knowledge support structure. That is, the activities conducted by actors from the Yuanli region and actors from SunnyRush. The interconnection of operational interfaces between the public administration and the knowledge support structure showed that the public sector actors played a supporting role to external actors. We summarise the interconnections of operational interfaces among three domains during the processes of social innovation in Table 7.

Table 7: Summary for interconnections of SunnyRush among the three domains in relation to the processes of social innovation

Interconnections of the operational interfaces / Processes of SI	Rural Areas & Public Administration	Public Administration & Knowledge support structure	Knowledge support structure & Rural Areas	Convergence
Problematisation	RDPs (Annual Projects support and consultant)	RUP (Online recruitment, Programme orientation, 3-day training workshop)	NUU team (Prof. Yang) SunnyRush team for RUP	RUP (first talk among students, locals and officials)
Expression of interest	as the above	-	Implementing RUP (2 months in rural areas) MUJI Bronze medal	-
Delineation and coordination	as the above	RUP II YRP RSEP	Ran SunnyRush Company and found other craftswomen in Yuanli: *Aim for taking care of craftswomen and culture preservation *Technics preservation *Collaboration with other craftswomen *Products developing and producing *Marketing and selling*43 craftswomen following *Income increasing *New type of networking and collaboration	-

5.2.2 Case of Ririren

5.2.2.1 Mapping the institutional arrangements among operational interfaces of the three domains

The story began when the Ririren student team participated in the 5th RUP in 2015. We identified the key actors through the three domains. For the domain of rural areas, Renli village was the place where actors interacted with each other. The key actors were people from the LAG and pear farmers. For the domain of public administration, the main actors were officials from SWCB and SWCB-TB. They were key people in charge of rural development policies, programmes, projects, and budgets. Moreover, people from the district office, who own local administrative resources, also took part. For the domain of knowledge support structure, the main actors were the Ririren student team.

Before the Ririren student team participated in RUP, Renli village collaborated with public sector agencies to promote their pear produce through the Rural Regeneration policy-related programmes, including an empowerment programme, rural regeneration plans, and annual implementing projects and consulting. By the time the Ririren student team moved to Renli village, the SWCB-TB supported them in becoming familiar with Renli village. The student team observed that local people were not aware of the existing issues of environmental pollution during the time of the RUP village-stay. The Ririren student team saw that pear farmers were used to burning agricultural wastes without any environmental consideration. That was normal for local people; however, for the Ririren student team, burning waste and fire everywhere in the village was unimaginable. The interaction between the student team and local people brought a new perspective in terms of environmental protection. As the leader of LAG pointed out:

> We were blind because we had lived here for a long time, and we felt normal. However, they came from outside, feeling it did not make any sense. So, the way that students stay in villages can encourage the locals to change. (The leader of Renli LAG)

They found the environmental issue was caused by grafting pear plantations that produce agricultural wastes, especially the amount of pear stems with plastic tapes.

Therefore, finding a solution to deal with such environmental problems caused by agricultural waste became the purpose of the Ririren student team. Later on, the team started by thinking about what they could do to deal with those stems instead of burning them. They discussed this with local people from the LAG and came up with the idea "to make pens." Due to the shape of the pear stem being quite similar to the shape of a pen, the student team decided to implement this idea together with local people. However, the student team could only produce a handmade version of the pear stem pen at the beginning. People from the LAG made use of cutting machines to make the quality of the pear stem pen uniform. The such practical experience helped the Ririren student team to produce their prototype of the pear stem pen. As the policymaker of RUP said:

> At the beginning of RUP, we thought that the role of students was to be helpers in rural communities, but after a few years of implementation, we realised that they were actually collaborating, not just helping one-sidedly. (The policymaker of RUP)

Afterwards, the student team communicated with pear farmers to collect and categorise pear stems. Then they produced the first batch of pear stem pens through collaboration and discussion with local people. The pear stem pen was first launched at the annual event of Xinshe Flower Sea[1]. The product appealed to the public through environmental protection initiatives and as a means to more sustainable agriculture. Due to this product, the Ririren student team even received the innovation award in the 5th RUP. The outcome has coincided with the expectation of the policymaker of RUP:

> By the time we designed the RUP, we had considered how to help rural areas; however, importing creativity to see different possibilities in rural areas is actually our main point. (The policymaker of RUP)

After the RUP, Renli village even set up a regular craft workshop for people to discuss and develop new products from pear stems to deal with local agricultural waste. The local government later noticed the issue of agricultural waste, so the local district office arranged a regular special truck to help cope with pear stems. The success of the pear

[1] The "Xinshe flower sea" is an annual event which uses the landscape of flowers to promote agriculture and tourism industry in Taichung city. (https://flowersea.tw/)

stem pen influenced the whole Renli village. For people from Renli village, the pear stem crafts products did not need to serve the purpose of making money. Instead, making such craft products became a hobby and an integral part of the village. As the leader of LAG mentioned:

> We, the village, have not promoted it hard. If there are pear stem pens that can be sold, we will sell them. However, people like me who have to farm and work with rural regeneration projects are quite busy. The sales volume of the products is also limited because the pear stem pen is not a daily necessity. (The leader of Renli LAG)

For the Ririren student team, however, the pear stem pen provided an opportunity to start a business. Therefore, two students of the Ririren student team established a Ririren enterprise to do businesses related to agricultural waste, environmental protection, and circular agriculture. They were supported by funds and programmes from SWCB, such as the RUP II and YRP. The Ririren enterprise used a business model to help solve the environmental problem by selling more pear stem pen products. However, the founder of Ririren also noticed that it does not make sense to solve the problem of the huge amount of agricultural waste by selling pens. Instead, as the founder said:

> It is an initiation of the environmental movement. (The founder of Ririren)

Through the new form of collaboration was shaped. The founder of Ririren pointed out an interesting future vision of the enterprise:

> The vision of our enterprise is called ‘Ririren being dissolved’, which means to pursue a future that had no reason to need the Ririren enterprise. That is a future without agricultural waste. (The founder of Ririren)

For the case of Ririren, we mapped its institutional arrangements among operational interfaces of the three domains from our qualitative data, as Figure 28 shows.

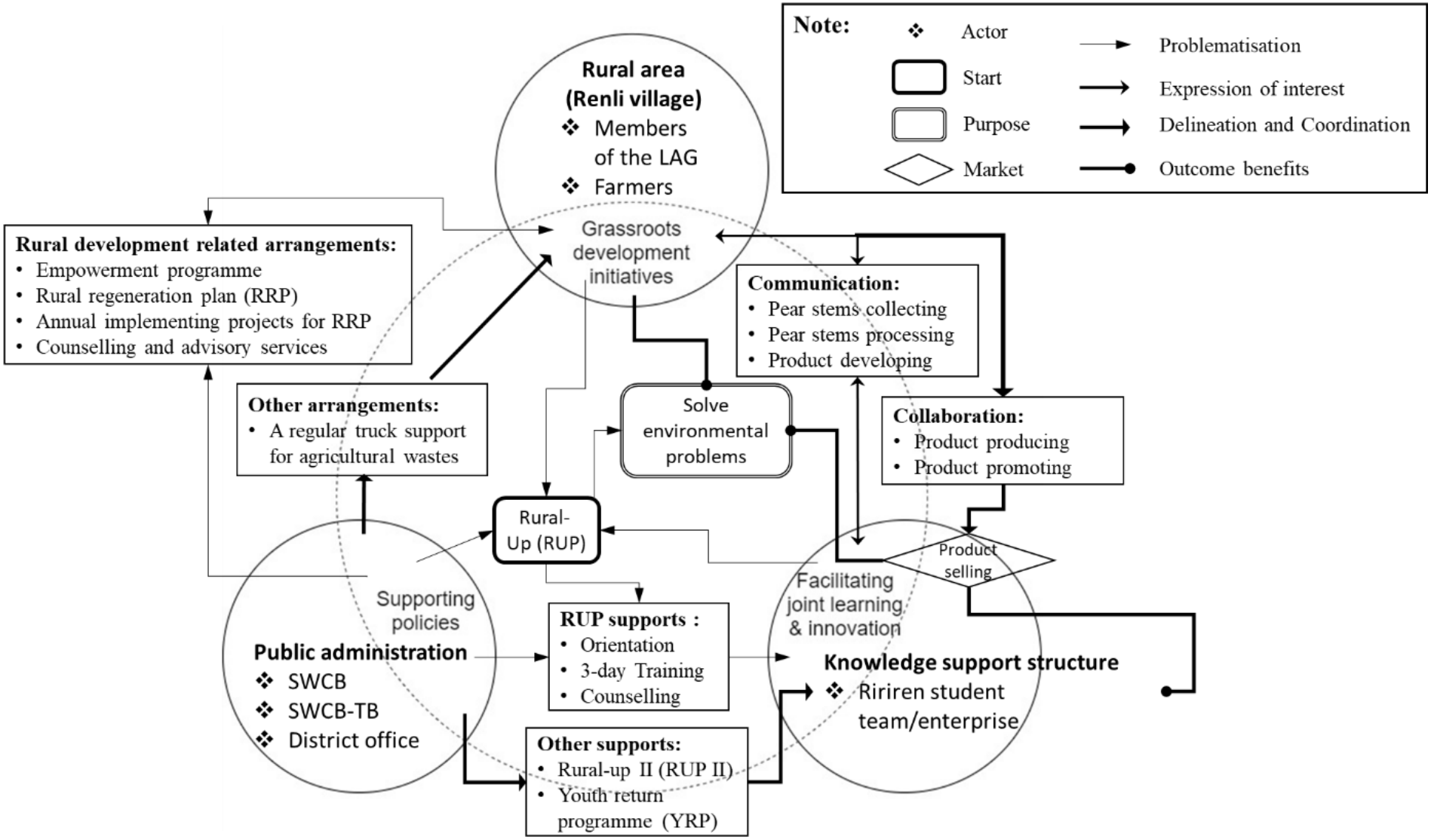

Figure 28: The operational interface of Ririren

5.2.2.2 Analysing the operational interfaces among the three domains in relation to social innovation

The interaction of operational interfaces among the three domains during the three phases of social innovation is as follows:

Problematisation: initially, the grassroots development initiatives of Renli village did not aim to solve environmental problems. Instead, the village aimed to promote pear produce. However, the Ririren student team provided another path for local development. We observe that the interconnection of operational interfaces between Renli village and public administration was driven by programmes related to rural development. The interconnection of operational interfaces between Renli village and the Ririren student team did not connect initially. There was also no interconnection of operational interfaces between the public administration and the Ririren student team. However, the interconnections started to change when the Ririren student team and the LAG Renli village both decided to participate in RUP through online recruitment, orientation, and 3-day training workshop in the convergent interconnection of operational interfaces among Renli village, public administration and the Ririren student team.

Expression of interest: in this phase, we observe that communication played the main role when the Ririren student team moved into the village in the interconnection of the operational interface between Renli village and the Ririren student team. On the one hand, the Ririren student team first tried to mobilise pear farmers to collect and process the pear stems instead of burning them. On the other hand, the local actors played a critical role in helping the Ririren student team realise their ideas.

Delineation and Coordination: we observe the change realised mainly in the product production and promotion in the interconnection of operational interfaces between Renli village and the Ririren student team. Moreover, the local district office was involved in contributing to dealing with local agricultural waste. At the same time, SWCB and SWCB-TB played the role of providing programmes to support students.

Overall, we observe that the interconnection of operational interfaces between the rural area and the public administration can be changed during the process of social innovation. Just

as in the case of SunnyRush, the RUP as the starter triggered the change in the interconnection of operational interfaces among the three domains. The implementation of the change mainly happened in the interconnection of operational interfaces between the rural area and the knowledge support structure. The interconnection of operational interfaces between the public administration and the knowledge support structure showed that the public sector actors played a supporting role to external actors. The summary is shown in Table 8.

Table 8: Summary for interconnections of SunnyRush among the three domains in relation to the processes of social innovation

Interconnections of the operational interfaces / Processes of SI	Rural Areas & Public Administration	Public Administration & Knowledge support structure	Knowledge support structure & Rural Areas	Convergence
Problematisation	RDPs (Annual Projects support and consultant)	RUP (Online recruitment, Programme orientation, 3-day training workshop)	NUU team (Prof. Yang) SunnyRush team for RUP	RUP (first talk among students, locals and officials)
Expression of interest	as the above	-	Implementing RUP (2 months in rural areas) MUJI Bronze medal	-
Delineation and coordination	as the above	RUP II YRP RSEP	Ran SunnyRush Company and found other craftswomen in Yuanli: *Aim for taking care of craftswomen and culture preservation *Technics preservation *Collaboration with other craftswomen *Products developing and producing *Marketing and selling*43 craftswomen following *Income increasing *New type of networking and collaboration	-

6. Discussion

This research studies two cases of community-driven revitalisation practices and two cases of external support-driven revitalisation practices to improve our understanding of social innovation in rural development. It applies the lens of ANT in comparison with the actor-oriented approach to disentangle the roles of multiple actors (actants), both human and non-human, and to better understand the complex interdependencies of endogenous and exogenous forces with respect to social innovation, as well as to explore the role of the public sector. This chapter discusses the findings along with the research objectives and questions and puts them into perspective with the broader literature on social innovation and rural development.

6.1 Objective 1: role of actors in community-driven Social Innovation

6.1.1 Features of internal actors and the public sector in triggering community-driven rural social innovation

Based on the ANT application, the emergence of tangible solutions and social innovation could be observed through the concept of networks with positive and negative environmental effects. A *network with negative environmental effects* represents the formulation of local problems and the expression of social needs, which led to environmental deterioration in the cases of Gongrong and Picheng. A *network with positive environmental effects* illustrates how internal actors create new forms of civic engagement and social relations. Hence, if social needs have been met and a network is stable as it works towards finding innovative solutions, we can identify the potential to engage in social innovation.

In line with NEUMEIER (2012; 2017), the studied processes in both cases started with a policy-driven initial impetus. However, this was not sufficient; equally, local initiative and leadership were complementary prerequisites (HORLINGS ET AL., 2018; WELLBROCK & KNIERIM, 2014). We observed a series of trial-and-error processes and communications among internal actors, such as initiators (leaders), members of the LAGs, and residents that

collaborated with the public sector (i.e., SWCB officials) when the networks with positive environmental effects were forming. This implies that the solution was uncertain and needed to be (re-)discovered and consolidated; in addition, it reveals the importance of strengthening internal cohesion and external connections (DAX ET AL., 2016; MURDOCH, 2000).

The community vision that was developed by internal actors, that is, leaders and members of the LAGs, directed the path of the environmental restoration process. One case focused on cleaning action; namely, the nonhuman actant "government projects" provided tools and resources for solving the environmental problem. The other case was driven by education to foster environmental awareness. It is vital for internal actors to stimulate residents' interest in participating and provide a stage for more actants to interact. The participants keep seeing benefits and are able to achieve their interests through joining this network. Generally, our results reflect what literature attributes to social innovation's impacts, that is, "enhance society's capacity to act" (BOCK, 2012; THE YOUNG FOUNDATION, 2012). However, these effects may be short-term or single events, as in the case of Picheng, or long-lasting and with transformative potential, as in the case of Gongrong.

Focusing on internal actors' interests and intentions, both cases that are described in this research involved similar societal problems (environmental deterioration, among others) that provided initial momentum. In both cases, positive networks were formed to bring about tangible change, while this was only accompanied by social innovation in one case. In this case, we saw that the interests of the farmers and residents aiming for a better way of farming or forming friendships seemed irrelevant to what we expected from social innovation. Even the leaders and members of the LAG did not realise that they were implementing social innovation. However, they did know the importance of education, learning, and empowerment as the keys to ensuring the community's future. Hence, if a better solution appears, regardless of whether it is embedded with social innovation, it will probably be adopted (BOSWORTH ET AL., 2016A). Thus, the internal actors may not aim to innovate society — they intend to solve practical local issues. These observations imply that the outcome of social innovation can be unintentional (HOWALDT AND SCHWARZ, 2010; NOACK AND FEDERWISCH, 2019; CHEN ET AL., 2022). In other words, tangible and

material outcomes are crucial from the viewpoints of internal actors that may challenge the literature's perspective that focuses on immaterial outcomes and treats material outcomes as supplementary results (BUTKEVIČIENĖ, 2009; NEUMEIER, 2012).

The role of the public sector in the cases was exactly reflecting the governance issue in neo-endogenous rural development, that is, co-partnerships, which implies the responsibility between the public and private sectors was blurred (STOKER, 1998; WOODS, 2005). The findings show that the public sector was a support provider bringing the initial impetus, policy instruments, and support; however, whether social innovation will occur or not still depend on internal actors' choices and actions.

6.1.2 Human and nonhuman actants matter in shaping rural social innovation

The ANT includes both human and nonhuman actors (actants) as sources of intentional action and voluntary changes (LATOUR, 1996; 2005). The presented cases illustrate the complex interactions among actants of both types that may or may not lead to social innovation in rural communities. For the human actants, the initiators, especially returning migrants, were critical for triggering innovation (DARGAN & SHUCKSMITH, 2008). They obviously became leaders who strongly influenced the direction of development and internal cohesion, along with the external connections in the communities (HORLINGS ET AL., 2018; WELLBROCK & KNIERIM, 2014). Other human actors, such as administrative bodies, played an active role in providing critical tools and support in both cases. One explicit difference between the two selected cases was the human actant "core cadre", that is, the active members of the LAG, who played a critical role in implementing bottom-up movements for mobilising other actors and disseminating new initiatives (BOSWORTH ET AL., 2016A; DARGAN & SHUCKSMITH, 2008).

As the targeted human actors of mobilising, the participation of residents and farmers is considered the foundation for successful (neo)endogenous rural development and social innovation (BOCK, 2016; NEUMEIER, 2012). Moreover, they are influenced not only by other human actors but also by nonhuman actants; for example, in our cases, policies and subsidies could encourage or influence the farming methods used by farmers. The approach

that is used to implement the community vision can lead to different results of civic engagement, such as “spaces for regular learning, meetings, and discussion”, which emerged in the Gongrong case only. Such spaces provide an opportunity for interaction, knowledge exchange with external experts, innovation and learning (WIELINGA ET AL. 2017; WILLETT & LANG, 2018), and the development of confidence and competences. The latter is important for the individual citizen but also contributes to the emergence of common values, collaborative relations, and practices. Policy instruments could provide guidelines and a foundation for development and external resources, such as funds and knowledge for community projects, along with guidance from experts (CHEN ET AL., 2022). These are considered critical for boosting social innovation (BOSWORTH ET AL., 2016A). Finally, the nonhuman actant “environment” can be replaced with other actants that refer to the arena of the core problem in communities that drives and motivates actants to take positive or negative action.

6.2 Objective 2: role of actors in external support-driven Social Innovation

6.2.1 Features of external actors in triggering external support-driven rural social innovation

The cases of SunnyRush and Ririren provide several insights into the features of external actors in external support-driven rural social innovation.: Firstly, different types of intervention from external actors of knowledge support structure were observed through the model of social innovation from NEUMEIER (2012). In the problematisation phase, external actors brought new perspectives to the challenges at hand, which helped internal actors view problems differently than before. Both cases reveal that external actors valued local resources more than the local people because they could perceive them in a wider context. However, they also faced difficulties communicating with local people about their perceptions, so they had to understand the gaps between the two groups.

The external actors from the knowledge support structure had been considered helpers in rural areas in the original design of RUP. The RUP programme reflected how in demand external actors were to a certain degree. According to the evaluation report of the RUP on

Social Return On Investment (SROI), 45% of the outcome benefits belong to students, and only 12% belong to rural areas (KO 2019, P. 110). That is, students gained more benefits than the public sector, as well as people from rural areas. This suggests that the role of external actors, to a certain degree, might not have been sole as helpers, but they themselves had also been helped by the people from rural areas and the public sector. It was observed in both cases that when students provided ideas, they needed to gain practical experiences from local people to realise their ideas, which would, in turn, foster their own growth. From the findings, it can be concluded that external actors, such as students, might require more support than internal actors. In other words, they can play a key role as helpers in fuelling social innovation only if they get sufficient support from rural areas and the public sector, resulting in their growth to face upcoming challenges.

6.2.2 Features of the public sector and internal actors in fuelling external support-driven rural social innovation

In the cases of SunnyRush and Ririren, the public sector played a different role in comparison to the traditional relationship between the public sector and rural areas. The traditional relationship could be observed through the interconnection between rural areas and public administration, which includes all rural development-related programmes, projects, and budgets. In the context of neo-endogenous rural development, internal actors play a key role in unlocking local potential and connecting with external forces (WARD ET AL. 2005; GKARTZIOS & LOWE 2019). Actors from the public sector are relatively passive. However, in SunnyRush and Ririren cases, the public sector was active in creating connections between rural areas and the knowledge support structure that provides opportunities for change.

From the results, the role of the public sector was active at the beginning of social innovation in the problematisation phase. The public sector made use of RUP to link internal actors and external actors through competition in changing rural areas. The role of the public sector in this phase was a *connection builder* and an *opportunity provider*. The RUP programme provided a common goal and the reason for the change, which fostered the initial movement. In the expression of interest phase, the public sector's role shifted to a *mediator* to solve communication issues and to a *supporter* for encouraging external

actors of the knowledge support structure to realise their plan. In the phase of delineation and coordination, the public actor became the sole *supporter* for securing the external actors' and their projects' survival. As to the public sector's role, there might be more ways for external actors to trigger rural social innovation. However, based on the findings, the study proposes that the public sector's role does not need to be a social innovation implementer. Instead, the public sector can serve as a bridge to provide opportunities for continuous engagement in developing social innovation.

6.3 Objective 3: recommendations for integrating the concept of Social Innovation into rural development policies and programmes

6.3.1 Pros, cons, and differences between community-driven and external support-driven approaches in fuelling rural SI

Before providing recommendations to integrate the concept of SI into rural development, the attention firstly draws on the pros, cons, and differences between the two approaches that fuelled rural social innovation in this research: the community-driven and external support-driven approaches.

For the community-driven approach, the main pro identified in driving rural SI mainly refers to the ideal outcomes that provide a more sustainable solution with spontaneous organisation and autonomy in local communities. From the case of Gongrong, such self-organisation was able to act in facing societal dilemmas and adapt to new challenges. These share the core value of bottom-up initiative that is rooted in the endogenous model (VAN DER PLOEG, 2000; WARD ET AL., 2005). On the other hand, the main cons refer to the uncertain probability of SI occurrence that can be highly influenced by local actors' vision, interests, and practical choices (BOSWORTH, 2016; CHEN & KNIERIM, 2020), that is, the choices they make can simply end up with a practical solution, instead of social innovation. They can even stop acting when their vision has been achieved, just as the case of Picheng revealed.

In contrast, the external support-driven approach has the advantage of engaging a wide range of potential innovation facilitators. From the case of SunnyRush and Ririren, we can observe that the external actors brought ideas, such as new fashion designs and environmental protection, which were highly different in comparison with local actors. These external ideas are considered helpful for the innovation process in local communities (Dargan & Shucksmith, 2008); however, the disadvantages mainly refer to how external actors blend into local society and collaborate with local actors. In the case of SunnyRush and Ririren, the external actors did not simply contribute to the local communities in the beginning. Instead, more support was required to fertilise their own growth in communication with the locals and facing uncertain local challenges.

From the findings, the main differences between the two approaches in fuelling SI can be observed in two aspects: firstly, the problems that are intended to be solved in the community-driven approach seem more local-oriented, while they are more issue-oriented in external support-driven approach. For instance, in the Gongrong case, the local action groups drove the change and aimed to solve the local environmental problem. Therefore, where the beneficiaries came from was limited by the geographical boundary, that is, residents from Gongrong and its neighbour community. In contrast, in the SunnyRush case, the external student team took part with local people and focused on solving the decline of the local traditional rush weaving industry. The beneficiaries did not be limited by a community or two connected communities. Instead, they came from different communities across geographical boundaries that had a common interest as SunnyRush, in solving the traditional rush weaving decline. This reveals the second difference, that is, "where the actors or so-called beneficiaries are from." Unlike the former, which is often from the local, the latter is no longer limited to a single community or a region. Instead, the actors can be someone who agrees upon the initiative beyond community boundaries.

6.3.2 Role difference of the public sector between community-driven and external support-driven rural SI

The findings show that the public sector played a supportive role in community-driven rural SI. The public sector's role in governance was as co-partnerships (STOKER, 1998; WOODS, 2005; SHUCKSMITH, 2010). For external support-driven rural SI, however, the role of the

public sector was more than co-partnerships. From the cases of SunnyRush and Ririren, the public sector played a bridging role that connected different actors. The actors from the public sector did not simply provide budgets and advisory services to address local issues. Instead, they concentrated on providing innovative opportunities and connections linking potential external partners.

In addition, the external support-driven approach conducted by this research, to a certain degree, reflects the nexogenous approach. That focuses on reconnecting the linkage across geographical boundaries. From the empirical experience of the RUP programme, this linking approach might not guarantee the success of rural social innovation—however, it did provide a bright chance for the public sector actively confront the existing dilemmas of rural development, that is, the tension between bottom-up and top-down approaches in marginal rural areas. In other words, the public sector's roles are no longer as a partner or sponsor to rural areas; they can actively be as a bridge to link potential partners that are unreachable to community actors somewhere beyond geographical boundaries.

6.3.3 Strategies for integrating SI into rural development policies and programmes

The two approaches are like two sides of the same coin. The two sides might be opposite each other. However, the value still depends on the coin itself. Hence, the two approaches should not be seen as a dichotomy. If an approach can boost rural SI, it has value, whether it is community-driven or external support-driven; that is, both approaches should be considered. Therefore, the strategies for integrating SI into rural development are based on the two existing approaches to pursue better social innovation engagements.

From the empirical cases and the above discussion about the pros, cons, and differences between community-driven and external support-driven approaches, as well as the public sector's role, we can conclude that social innovation in terms of rural revitalisation is valuable in its outcomes, uncertain in its emergence, challenged by the marginalising rural reality, and promising on external connections without geographical boundaries. In other words, if the emergence of rural social innovation is unpredictable and rural marginalisation is inevitable, enhancing the external linkages and reducing its negative influence on the

local communities will be the opportunity for the public sector to promote the value of social innovation in rural areas.

Hence, potential strategies for the public sector to integrate social innovation into rural development policies and programmes should draw on: (1) the public sector could actively play the bridging role to provide more opportunities to connect potential external partners, as well as provide adequate support for external actors engaging in local communities; (2) the public sector should encourage a shared vision for continuous participation. This is considered critical for continuous civic and social innovation engagement (CHEN & KNIERIM, 2019). Regular innovative programmes and activities with certain themes could be helpful for people to pursue a common goal, such as German federal village competition (Unser Dorf hat Zukunft). The programme can even embed into relevant incentive policies to enhance continuous civic engagement; (3) the public sector should draw more attention to educational and learning types of programmes. The purpose is to develop a self-learning mechanism and autonomy in local communities.

6.4 Objective 4: theoretical and methodological insights for studying rural SI

This study attempts to provide theoretical and methodological insights on rural social innovation by comparing the ANT and actor-oriented approach from empirical case studies. On the one hand, the translation procedure of ANT is a process of progressively shaping social and natural worlds, that is, an opportunity to observe silent actants (CALLON, 1986; LATOUR, 2005). In the cases of Gongrong and Picheng that are presented here, the nonhuman actant was not simply dominated by powerful actants, such as the leader but engaged various other actants with less prominent appearances. Despite the fact that ANT has been criticised for being without a coherent system of generalisations that can be tested universally (BUEGER & STOCKBRUEGGER, 2017) and for its "risks of describing endless chains of associations" (MÜLLER, 2015), ANT puts "social explanations back on its feet" (LATOUR, 2005: P. 64), which does not explain social innovation by itself, but it enables open-minded empirical investigations (BUEGER & STOCKBRUEGGER, 2017). Thus, a better

understanding of the “needs”, “interests”, and “interactions” of actants that drive community-driven development and social innovation practices are clarified.

On the other hand, rooted in an actor-oriented approach, the place-based joint learning framework provides an integrated view of social relations among different social actors from different domains (WELLBROCK ET AL., 2012). From the cases of SunnyRush and Ririren, the connections among different actors were clearly explored on the operational interface. The targeted social actors and their linkage with social innovation could be explained and visualised, although these actors could be theoretically criticised, existing a certain degree of ignoring social asymmetry. For comparing the ANT and actor-oriented approach, it is essential to answer a fundamental question raised by LONG (2015): “Does the approach advance our understanding of heterogeneous networks and collective forms of social action?”

From my point of view, the answer might depend on the focus of the research questions. Since the fundamental difference between the ANT and an actor-oriented approach is related to where social explanations take place; that is, the former provides an opportunity to look at silent and vulnerable actors without initial assumptions. This indicates that the ANT can be better used in exploratory research types with certain inequality considerations and without initial social explanation assumptions (MÜLLER, 2015). Actor-Oriented Approach analysis might be more useful in studying conflicts and negotiations that refer to social relations with initial social explanation assumptions due to its advantages of applying interface analysis to clarify social arrangements among social actors.

7. Conclusion

7.1 The potential of social innovation in rural revitalisation

This research explores the potential of social innovation in rural revitalisation analysing the actors' roles by applying ANT and an actor-oriented approach. Four cases of rural development practice in Taiwan were analysed and compared.

The study explored community-driven social innovation and showed that the continuity of civic engagement is often uncertain yet essential for social innovation to develop and prosper, as it is grounded in social learning and collective action processes. The internal actors may not aim to innovate society — they intend to solve practical local issues, and therefore, the outcome of social innovation can be unintentional; for that reason, tangible and material outcomes are crucial for the internal actors. This finding may challenge the literature's perspective that social innovation focuses on immaterial outcomes and treats material outcomes as supplementary results. Nevertheless, the study showed that the "core cadre" and "spaces for regular learning, meetings, and discussion" are crucial for social innovation engagement, enabling bottom-up movements, mobilising other actors, and disseminating new initiatives.

The study also elucidated external support-driven social innovation processes. The external actors can bring new perspectives to the challenges at hand, which helps internal actors view problems differently. However, they may face difficulties and challenges in communication, that is, the gap between internal and external perceptions. External actors could play a key role as helpers only if they get sufficient support from rural areas and the public sector, resulting in their own growth while facing upcoming challenges in fuelling social innovation.

This study also compared the pros, cons, and differences between the two rural development approaches and the role difference of the public sector. For the community-driven approach, its pros in driving rural SI mainly refer to a more sustainable solution with self-organisation and autonomy in local communities. However, its cons refer to the uncertain probability of SI occurrence that can simply end up with a practical solution,

instead of social innovation, and even stop acting when their vision has been achieved; The external support-driven approach, its pros in driving rural SI attribute to its possibilities that engage a wide range of potential innovation facilitators and ideas for boosting innovation process in local communities. However, its cons are the difficulties in how external actors blend into local society and collaborate with local actors. These two approaches, community-driven or external support-driven approaches—are like two sides of the same coin—while the former is more local-oriented in terms of local targeted problems and local joining actors, the latter is rather issue-oriented that can focus on the targeted problems and the joining actors without geographical boundaries.

The study observed the external support-driven approach conducted by the RUP programme might reflect on the "nexogenous approach" from BOCK (2016). From the empirical experience of this study, this approach might not guarantee the success of rural social innovation—however, it did provide a bright chance for the public sector to participate—the public sector's roles are no longer as a partner or sponsor to rural areas, they can actively be as a bridge to link potential partners somewhere beyond geographical boundaries.

The study proposed three strategies for better integrating social innovation into rural development policies and programmes, including: (1) the public sector should actively play the bridging role to connect local actors and potential external partners, as well as provide adequate support for external actors engaging and implementing in rural areas; (2) to provide and maintain a reachable shared vision for rural areas (e.g., making use of competition-type programmes regularly that embeds into relevant incentive policies with certain types of themes, such as social innovation) to offer a common goal for rural communities to pursue; (3) more attentions on educational and learning types of programmes to develop self-learning mechanism in local communities.

Finally, the study compared the ANT and actor-oriented approach in studying rural social innovation and suggested that approaches should depend on the focus of research questions. The ANT can be better used to explore types of research with certain inequality considerations and without initial social explanation assumptions. The actor-oriented

approach may be better used to study existed interactions among clear differentiation of social actors with initial social explanation assumptions.

Finally, turning back to look at the potential of social innovation in rural revitalisation, it can be concluded that rural social innovation is valuable in its outcomes, uncertain on its emergence, challenged by the rural reality, and promising on its external connections without geographical boundaries. Since rural marginalisation has been considered a result of large-scale socio-economic and political inequality (KÜHN, 2015), the adverse effects can even originate from outside the world, such as globalisation and climate change (LI ET AL., 2019). This implies that rural marginalisation might not be able to be solved locally (BOCK, 2016). If the future of rural marginalisation is inevitable, to survive in its effects is essential. In other words, what rural social innovation contributes to the future of rural areas may not be able to eliminate the causes of rural marginalisation; however, it provides an approach to adapt its effects, that is, a future that rural areas might not have many inhabitants—however, they have more self-organisation—initiators, actors, more external partners, and connections are driven by needs to solve common societal problems—without geographical boundaries.

Further research on rural social innovation should focus more on how public sectors and, particularly, external actors can provide support by triggering and fuelling social innovation (BOSWORTH ET AL., 2016a; VERCHER ET AL., 2020). The question remains as to how to lower the risks and uncertainty when external actors indicate that they are willing to take part in developing social innovation in rural areas. This might be critical for rural areas' survival and adaptation in response to future dilemmas, especially in marginal rural regions.

7.2 Significance and limitation

This study contributes to the knowledge of social innovation in the context of rural development by clarifying the potential of social innovation in rural revitalisation practice. This will help researchers and policymakers better understand rural social innovation and its contributions to rural development and address the current shortage of research in this area.

For the limitations, this is a qualitative case study. Its findings cannot necessarily be generalised to other countries. Furthermore, the scope of this study is built upon the background of neo-endogenous rural development practice. This implies the study maybe not be applicable to other rural development models.

8. References

Bock, B. (2012). Social innovation and sustainability; how to disentangle the buzzword and its application in the field of agriculture and rural development. Studies in Agricultural Economics, 114(2), 57–63. https://doi.org/10.7896/j.1209

Bock, B. B. (2016). Rural Marginalisation and the Role of Social Innovation; A Turn Towards Nexogenous Development and Rural Reconnection: Rural marginalisation and the role of social innovation. Sociologia Ruralis, 56(4), 552–573. https://doi.org/10.1111/soru.12119

Bosworth, G., Rizzo, F., Marquardt, D., Strijker, D., Haartsen, T., & Aagaard Thuesen, A. (2016a). Identifying social innovations in European local rural development initiatives. Innovation: The European Journal of Social Science Research, 29(4), 442–461. https://doi.org/10.1080/13511610.2016.1176555

Bosworth, G., Annibal, I., Carroll, T., Price, L., Sellick, J., & Shepherd, J. (2016b). Empowering Local Action through Neo-Endogenous Development; The Case of LEADER in England: Empowering local action. Sociologia Ruralis, 56(3), 427–449. https://doi.org/10.1111/soru.12089

Butkevičienė, E. (2009). Social innovations in rural communities: methodological framework and empirical evidence. Socialiniai mokslai, (1), 80-88. https://etalpykla.lituanistikadb.lt/object/LT-LDB-0001:J.04~2009~1367170917843/

Bueger, C., & Stockbruegger, J. (2017). Actor-Network Theory. In D. R. McCarthy (Ed.), Technology and World Politics (1st ed., pp. 42–59). Routledge. https://doi.org/10.4324/9781317353836-3

Callon, M. (1986). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. Power, Action and Belief: A New Sociology of Knowledge?, 196–223. http://doi.org/10.1111/j.1467-954X.1984.tb00113.x

Callon, M. (1990). Techno-economic Networks and Irreversibility. The Sociological Review, 38(1_suppl), 132–161. https://doi.org/10.1111/j.1467-954X.1990.tb03351.x

Chen, Y.-Y., & Ku, Y.-W. (2017). Community practice at a crossroad: The approaches and challenges in Taiwan. Community Development Journal, 52(1), 76–91. https://doi.org/10.1093/cdj/bsw046

Chen, H., Knierim, A., 2020. Unravelling processes of Social innovation in rural areas: a comparative case study based on actor-network perspective 60 Jahrestagung der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues (GeWiSoLa), online, 23-25 September 2020 (Oral presentation and paper contribution)

Chen, H.-C., Knierim, A., & Bock, B. B. (2022). The emergence of social innovation in rural revitalisation practices: A comparative case study from Taiwan. Journal of Rural Studies, 90, 134–146. https://doi.org/10.1016/j.jrurstud.2022.02.003

Council of Agriculture. (2012). Integral development plan for Rural Regeneration - the 1st phase implementation plan (2012-2015). https://www.nantou.gov.tw/upload/70438_2.PDF (in Chinese)

Council of Agriculture. (2019). The 3rd phase Implementation plan for Rural Regeneration (2020-2023)(https://www.coa.gov.tw/redirect_files.php?id=40365&file_name=1UQ4XTRLfqYieNXWGSlash1A0Jr2AIaFlSSIZFfQsQWGEqualWGEquall3Ja8QwBpKPPDNO5eJyRQVRMRIa8X4QPMUfdsedKHpgzwd5VRWGPlus) Accessed 18 July 2021 (in Chinese)

Copus, A., Shucksmith, M., Dax, T., & Meredith, D. (2011). Cohesion Policy for rural areas after 2013: A rationale derived from the EDORA project (European Development Opportunities in Rural Areas) - ESPON 2013 Project 2013/1/2. Studies in Agricultural Economics, 113(2), 121–132. https://doi.org/10.7896/j.1113

Copus, A.; Perjo, L.; Berlina, A.; Jungsberg, L.; Randall, L.; Sigurjónsdóttir, H. (2017) Social innovation in local development: Lessons from the Nordic countries and Scotland., Nordregio Working Report, 2017, No.2., 45pp. ISBN: 978-91-87295-46-1

Crotty, M. (1998). The foundations of social research: Meaning and perspective in the research process. Sage Publications.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (Fifth edition). SAGE.

Dargan, L., & Shucksmith, M. (2008). LEADER and Innovation. Sociologia Ruralis, 48(3), 274–291. https://doi.org/10.1111/j.1467-9523.2008.00463.x

Dax, T., Strahl, W., Kirwan, J., & Maye, D. (2016). The Leader programme 2007–2013: Enabling or disabling social innovation and neo-endogenous development? Insights from Austria and Ireland. European Urban and Regional Studies, 23(1), 56–68. https://doi.org/10.1177/0969776413490425

Dwiartama, A., & Rosin, C. (2014). Exploring agency beyond humans: The compatibility of Actor-Network Theory (ANT) and resilience thinking. Ecology and Society, 19(3), art28. https://doi.org/10.5751/ES-06805-190328

European Commission. Bureau of European Policy Advisers, Dro, I., & Therace, A. (2011). Empowering people, driving change: Social innovation in the European Union. Publications Office. https://data.europa.eu/doi/10.2796/13155

Heeks, R. (2013). Actor-Network Theory for Development Working Paper Series. https://doi.org/10.13140/RG.2.2.14531.96809

Howaldt, J., Schwarz, M., Henning, K., & Hees, F. (2010). Social innovation: Concepts, research fields and international trends. Aachen: IMA/ZLW

Horlings, L., Roep, D., & Wellbrock, W. (2018). The role of leadership in place-based development and building institutional arrangements. Local Economy: The Journal of the Local Economy Policy Unit, 33(3), 245–268. https://doi.org/10.1177/0269094218763050

Gkartzios, M., & Lowe, P. (2019). Revisiting neo-endogenous rural development. In M. Scott, N. Gallent, & M. Gkartzios (Eds.), The Routledge companion to rural planning (pp. 159–169). New York: Routledge.

Kao, H., & Chen, W.-P. (2000). The Chi-Chi Earthquake Sequence: Active, Out-of-Sequence Thrust Faulting in Taiwan. Science, 288(5475), 2346–2349. https://doi.org/10.1126/science.288.5475.2346

Ko, Y. C. (2019). Evaluation report of Rural-up programme on Social Return On Investment (SROI): Prepared by Soil and Water Conservation Bureau, Council of Agriculture, Executive Yuan.

Kühn, M. (2015). Peripheralization: Theoretical Concepts Explaining Socio-Spatial Inequalities. European Planning Studies, 23(2), 367–378. https://doi.org/10.1080/09654313.2013.862518

Latour, B. (1987). Science in action: How to follow scientists and engineers through society. Harvard University Press.

Latour, B. (1994). On technical mediation. Common Knowledge, 3(2), 29–64.

Latour, B. (1996). On actor-network theory: A few clarifications. 369–381.

Latour, B (2005). Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford: Oxford University Press.

Law, J. (1992). Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity. Systems Practice, 5(4), 379–393. https://doi.org/10.1007/BF01059830

Li, Y., Westlund, H., Zheng, X., & Liu, Y. (2016). Bottom-up initiatives and revival in the face of rural decline: Case studies from China and Sweden. Journal of Rural Studies, 47, 506–513. https://doi.org/10.1016/j.jrurstud.2016.07.004

Li, Y., Westlund, H., & Liu, Y. (2019). Why some rural areas decline while some others not: An overview of rural evolution in the world. Journal of Rural Studies, 68, 135–143. https://doi.org/10.1016/j.jrurstud.2019.03.003

Liu, Li-Wei. 2008. Reflections on Community Empowerment: Consideration of Urban-rural Differences, Perspectives of Urban Development, and Exploration of the Bottom-up Concept. Journal of City and Planning 35(4): 313-338 https://dx.doi.org/10.6128/CP.35.4.313 (in Chinese)

Liu, Y., & Li, Y. (2017). Revitalize the world's countryside. Nature, 548(7667), 275–277. https://doi.org/10.1038/548275a

Long, N. (2001). Development Sociology: Actor Perspectives (1st ed.). Routledge. https://doi.org/10.4324/9780203398531

Long, N. (2015). Activities, Actants and Actors: Theoretical Perspectives on Development Practice and Practitioners. In P. Milone, F. Ventura, & J. Ye (Eds.), Constructing a New Framework for Rural Development (Vol. 22, pp. 31–58). Emerald Group Publishing Limited. https://doi.org/10.1108/S1057-192220150000022002

Lowe, P., Ray, C., & Ward, N. (1995). Beyond endogenous and exogenous models: Networks in rural development. In J. D. Van der Ploeg & G. Van Dijk (Eds.), Beyond modernisation: The impact of endogenous rural development, 87–105. Assen, Netherlands: van Gorcum.

Lowe, P., Ray, C., Ward, N., Wood, D., & Woodward, R. (1998). Participation in rural development: a review of European experience. Newcastle upon Tyne: Centre for Rural Economy, University of Newcastle upon Tyne.

Moulaert, F., & Nussbaumer, J. (2005). The Social Region: Beyond the Territorial Dynamics of the Learning Economy. European Urban and Regional Studies, 12(1), 45–64. https://doi.org/10.1177/0969776405048500

Moulaert, F. (Ed.). (2013). The international handbook on social innovation: collective action, social learning and transdisciplinary research. Cheltenham: Elgar.

Murdoch, J. (2000). Networks—A new paradigm of rural development? Journal of Rural Studies, 16(4), 407–419. https://doi.org/10.1016/S0743-0167(00)00022-X

Mulgan, G., & Pulford, L. (2010). Study on Social Innovation for the Bureau of European Policy Advisors. The Young Foundation. Retrieved Jan 12, 2021 from https://www.youngfoundation.org/our-work/publications/study-on-social-innovation-for-the-bureau-of-european-policy-advisors/

Müller, M. (2015). Assemblages and Actor-networks: Rethinking Socio-material Power, Politics and Space: Assemblages and Actor-networks. Geography Compass, 9(1), 27–41. https://doi.org/10.1111/gec3.12192

Neumeier, S. (2012). Why do Social Innovations in Rural Development Matter and Should They be Considered More Seriously in Rural Development Research? - Proposal for a Stronger Focus on Social Innovations in Rural Development Research: Social innovations in rural development. Sociologia Ruralis, 52(1), 48–69. https://doi.org/10.1111/j.1467-9523.2011.00553.x

Neumeier, S. (2017). Social innovation in rural development: identifying the key factors of success. The Geographical Journal, 183(1), 34–46. https://doi.org/10.1111/geoj.12180

Nicholls, A., & Murdock, A. (Eds.). (2012). Social Innovation. Palgrave Macmillan UK. https://doi.org/10.1057/9780230367098

Noack, A., & Federwisch, T. (2019). Social Innovation in Rural Regions: Urban Impulses and Cross-Border Constellations of Actors: Social innovation in rural regions. Sociologia Ruralis, 59(1), 92–112. https://doi.org/10.1111/soru.12216

OECD. (2006). The New Rural Paradigm: Policies and Governance. OECD. https://doi.org/10.1787/9789264023918-en

OECD (2018) Rural Policy 3.0. Policy Note. A framework for rural development. Retrieved from https://www.oecd.org/cfe/regionaldevelopment/Rural-3.0-Policy-Note.pdf

Peng, H.Y. (2019). Evaluation report of SunnyRush Community Workshop - a Platform for Rush-weaving enthusiasts on Social Return On Investment (SROI): Prepared by Soil and Water Conservation Bureau, Council of Agriculture, Executive Yuan. (https://socialvalueuk.org/wp-content/uploads/2019/09/SunnyRush-Community-Workshop-_SROI-report_final-version.pdf) Accessed 20 July 2021

Pol, E., & Ville, S. (2009). Social innovation: Buzz word or enduring term? The Journal of Socio-Economics, 38(6), 878–885. https://doi.org/10.1016/j.socec.2009.02.011

Picheng Community Development Association (PCDA). (2011) Rural Regeneration Plan of Picheng Community. Yizhu, Chiayi County. (in Chinese)

Ray, C. (2006) Neo-endogenous rural development in the EU. Pp. 278–291 in P.J. Cloke, T. Marsden and P. Mooney eds, Handbook of rural studies (London: Sage)

Ragin, C. C. and Becker, H. (1992) What is a Case? Exploring the Foundations of Social Inquiry. Cambridge: Cambridge University Press.

Renli Community Development Association (RCDA). (2017) The report of Renli village settlement development and cultural resources surveys. Houli Dist., Taichung City. (in Chinese)

Ritchie, J., Lewis, J., McNaughton Nicholls, C., & Ormston, R. (Eds.). (2014). Qualitative research practice: A guide for social science students and researchers (Second edition). Sage.

Sanzhi Community Care Association (SCCA). (2011). Rural Regeneration Plan of Gongrong Community. Sanzhi, New Taipei city. (in Chinese)

Saldaña, J. (2016). The coding manual for qualitative researchers (3E [Third edition]). SAGE.

Shucksmith, M. (2000). Endogenous Development, Social Capital and Social Inclusion: Perspectives from leader in the UK. Sociologia Ruralis, 40(2), 208–218. https://doi.org/10.1111/1467-9523.00143

Su, T. J. & Hsu, Y. P. (2015). Promoting “Small Landlords and Big Tenants”, increasing scale and profits of management. Agriculture policy & review, 272, 9-13. Retrieved from https://www.coa.gov.tw/ws.php?id=2502563 (in Chinese)

The Young Foundation (2012) Social Innovation Overview: A deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe”, European Commission-7th Framework Programme, Brussels: European Commission, DG Research

TEPSIE (2014) ‘Social Innovation Theory and Research: A Summary of the Findings from TEPSIE.’ A deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe” (TEPSIE), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research

Tsohou, A., Karyda, M., Kokolakis, S., & Kiountouzis, E. (2012). Analyzing trajectories of information security awareness. Information Technology & People, 25(3), 327–352. https://doi.org/10.1108/09593841211254358

UNU-IAS and IGES (eds.) (2018). Sustainable Use of Biodiversity in Socio-ecological Production Landscapes and Seascapes and its Contribution to Effective Area-based Conservation (Satoyama Initiative Thematic Review vol. 4), United Nations University Institute for the Advanced Study of Sustainability, Tokyo.

United Nations (2018) Urbanization Prospects: The 2018 Revision. (https://population.un.org/wup/Country-Profiles/) Accessed the 18th of July 2021.

Van der Ploeg, J. D., & Dijk, G. van. (1995). Beyond modernization: The impact of endogenous rural development. http://edepot.wur.nl/407510

Van der Ploeg, J. D., Renting, H., Brunori, G., Knickel, K., Mannion, J., Marsden, T., de Roest, K., Sevilla-Guzman, E., & Ventura, F. (2000). Rural Development: From Practices and Policies towards Theory. Sociologia Ruralis, 40(4), 391–408. https://doi.org/10.1111/1467-9523.00156

Vercher, N., Barlagne, C., Hewitt, R., Nijnik, M., & Esparcia, J. (2020). Whose Narrative is it Anyway? Narratives of Social Innovation in Rural Areas – A Comparative Analysis of Community-Led Initiatives in Scotland and Spain. Sociologia Ruralis, soru.12321. https://doi.org/10.1111/soru.12321

Voeten, J., Haan, J. de, Groot, G. de, & Roome, N. (2015). Understanding Responsible Innovation in Small Producers' Clusters in Vietnam through Actor-Network Theory. The European Journal of Development Research, 27(2), 289–307. https://doi.org/10.1057/ejdr.2014.35

Ward, N., Atterton, J., Kim, T. Y., Lowe, P., Phillipson, J., & Thompson, N. (2005). Universities, the Knowledge Economy and Neo-Endogenous Rural Development. Universities, the Knowledge Economy and Neo-Endogenous Rural Development, (1).

Wellbrock, W., Roep, D., & Wiskerke, J. (2012). An integrated perspective on rural regional learning. European Countryside, 4(1), 1–16. https://doi.org/10.2478/v10091-012-0010-y

Wellbrock, W. (2013). Well-working operational interfaces: A key to more collaborative modes of governance. http://edepot.wur.nl/281988

Wellbrock, W., & Knierim, A. (2014). Unravelling Group Dynamics in Institutional Learning Processes. Outlook on Agriculture, 43(3), 187–191. https://doi.org/10.5367/oa.2014.0173

Wielinga, E., Koutsouris, A., Knierim, A., & Guichaoua, A. (2017). Generating space for innovations in agriculture: The AgriSpin project. Studies in Agricultural Economics, 119(1), 26–33. https://doi.org/10.7896/j.1043

Willett, J., & Lang, T. (2018). Peripheralisation: A Politics of Place, Affect, Perception and Representation: Peripheralisation: Affect, perception, and representation. Sociologia Ruralis, 58(2), 258–275. https://doi.org/10.1111/soru.12161

Woods, M. (1998). Researching rural conflicts: Hunting, local politics and actor-networks. Journal of Rural Studies, 14(3), 321–340. https://doi.org/10.1016/S0743-0167(97)00038-7

Woods, M. (2011). Rural Geography: Processes, Responses and Experiences in Rural Restructuring. SAGE Publications Ltd. https://doi.org/10.4135/9781446216415

World Bank, Data. (2021). Rural population (% of total population). Retrieved from https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

9. Appendices

9.1 Question outline of the in-depth interviews for Gongrong and Picheng

Name:

M/F:

Age:

Group:

Position:

Question notes:

(1) Introduction of the interview: consent for participation in the research interview

(2) Background of information:

a. Tell me about you and your role in this rural community.
b. How long have you lived here? (How long have you been here?)
c. What do you do?
d. What do you think was the biggest change in the community during this decade? Tell me more
e. How long have you participated in the community's actions?
f. Why do you want to participate (for a long time)?

(3) Before the actions:

a. I am curious about what situation and problems before the change. Tell me more. (What? When? Where? Why?)
b. How did the situation influence the community and local residents?
c. How did other people act when they faced the situation?
d. Did any actions take place at that moment?
e. Did you get any help from other agencies or organizations?
f. Who was in charge of the community?

(4) Problematisation:

a. Do you remember the beginning of whole actions'? What was the initial impetus? How did it begin?

b. Who were the initial people? Are you one of them? Do any other actors participate? Who? Relationship?
c. Can you tell me about a specific person who was most active at that time?
d. What reasons did they take action? What motivated you to do this?
e. Were there any disagreements or other voices at that time? What? Who?
f. Why not other actions?
g. Is there an achievement or contribution that you are most proud of?
h. When did you first hear about the ideas?

(5) Expression of interests:

a. Do you remember the first time you met other people (non-initial group) to express their ideas? What was the situation?
b. How did the ideas express to other people? How was it going?
c. What reactions those people had when you expressed the ideas?
d. What was most surprising to you?
e. What difficulties have you experienced?
f. Were there any other actors who had participated? Who? How did you find them? Relationship?
g. What did they do?

(6) Delineation and Co-ordination

a. Were there a lot of people who joined the actions in the beginning?
b. How did people make a common consensus?
c. Were there any other actors who had participated? Who? How did you find them? Relationship?
d. Is there an achievement or contribution that you are most proud of?
e. What difficulties have you experienced?
f. What motivated you to do this?
g. What did you feel when you took action with other people?
h. What differences between before and after took actions? (environment, people, networks)

(7) Now and Future

a. Do you think the actions have solved the problems (revitalised?)? Why or why not? (1-5)
b. Why do you continue (or not) to support the actions?
c. Do you feel people's perceptions or behavior change in terms of the environment? Why? Could you give me an example? (1-5)
d. What have you learned from past experiences?

e. What do you think if you can do it again? How would you solve the problems?
f. Could you give me three of the most important supports/actors for your community change? What reasons?
g. Do you think your community can revitalize with only limited support (even without public funds)? Why or why not?
h. What do you think about the future of your community under the shortage of public funds?

9.2 Question outline of the in-depth interviews for SunnyRush and Ririren

Name:

M/F:

Age:

Group:

Position:

Question notes:

(1) Introduction of the interview: consent for participation in the research interview
(2) Background of information:

a. When did you start to get close with the case industry (rush or pear pen)? What was your personal status (working status, studying, etc.) before?
b. What kinds of reasons made you decide to get into the case industry? Could you imagine the current changes that the industry has achieved?
c. Social innovations in the case industry involve communication and cooperation with multi-sectors. Could you please talk about the ways and facts of cooperating with other partners?
d. Have you encountered any difficult moments in the process of communication and cooperation? Is there any external assistance that you think is very important?
e. In your opinion, what impact does the development of the case industry have on you or your organization?
f. Is there anything you are most proud of from the development of the case industry? If you are asked to do it again, are there any conventions or things that you might change? "