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Procedia Economics and Finance 18 (2014) 439 – 446

Procedia
Economics and Finance

www.elsevier.com/locate/procedia

4th International Conference on Building Resilience, Building Resilience 2014, 8-10 September
2014, Salford Quays, United Kingdom

The Sampaguita Livelihood System in Sta. Cruz, Laguna, Philippines: A Case of a Transformative Resilience Development

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Abstract

Sampaguita growing is becoming a communal livelihood in several rice and vegetable producing provinces in the Philippines. The making of sampaguita flower leis provides a livelihood opportunity for many marginalized households. The research on the sampaguita livelihood system aimed to determine the perceptions about livelihood risks and analyze the development processes of resilience to solve the risks. Increased capability of the sampaguita growers to understand their risks prompted a transformative type of resilience. The constructivist methodology of the research used mixed qualitative and quantitative methods to explore the constructs and meanings of lived experiences about livelihood risks and resilience processes.

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Selection and/or peer-reviewed under responsibility of the Centre for Disaster Resilience, School of the Built Environment, University of Salford.

Keywords: Sampaguita (*Jasminium sambac* [L.]); livelihood risks; pests and diseases; social learning; resilience; constructivist methodology

1. Introduction

Sustainable livelihood is an imperative research issue within the area of global environmental change. A sustainable livelihood research approach is a convergence of analysis and action about the problem of development and environment at a local level (i.e. household, group or community) in the face of risks. Based on the conceptualization of Chambers and Conway (1992), the approach analyzes and develops the livelihood strategies

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and capitals of marginalized peoples to alleviate their well-being but in such a manner as not to degrade the natural resource base of livelihoods while solving livelihood risks.

The era for sustainable livelihoods faces an eco-challenge, owing mostly from the combined impact of livelihood activities on the ecological web of life (Roling, 2002). As the eco-challenge is increasingly becoming anthropogenic, the perspective of the social learning theory is an emerging praxiology that informs the intervention practice for sustainable livelihoods (Roling and Jiggins, 2001). The social learning theory underpinning this research is anchored on the definition of resilience.

A typology of definitions has been proposed for resilience within sustainability science. An ecological dimension of resilience was first defined by Holling (1973). Recent studies stress the social dimension or address whole social-ecological systems (Walker et al., 2006). The analytical boundary of this research is limited to social resilience. Social resilience is the capacity to cope in multiple ways to risks, which is made possible by enhancing personal and collective strategies and capitals (Magis, 2007). Social resilience in the context of sustainable livelihood put emphasis on the integrated concept of humans-in-nature, meaning that humans are actively affecting and being influenced by the natural resource base of livelihoods while solving livelihood risks (Berkes and Folk, 1998).

This research analyzed resilience in terms of the learning strategies and processes of local peoples that arise from their interplay with each other, with other groups or agencies and their natural environment. The consequent development changes in the local peoples' livelihood were also analyzed. The general conceptual properties of resilience to risks have been rigorously reviewed, but literatures show that only a few researchers on livelihood have studied the processes of resilience development that leads to successful adaptations. The study tackled this research gap by analyzing the world of lived experience of local peoples in their livelihood contexts.

The research used the sampaguita livelihood system as a case study. The livelihood is becoming a primary alternative income source for marginalized families in several provinces in the Philippines. Sta. Cruz, Laguna is a locality where many farmers have diversified into sampaguita livelihood due to a perceived decreasing profitability of rice-vegetable farming. Farmers wait for months to harvest and market rice and vegetable produce. If there are unfavourable conditions before harvest time, the expected produce and income may not be realized. Consequently, several farmers abandoned rice and vegetable farming in favour of sampaguita livelihood, while others have combined sampaguita-rice-vegetable farming in order to improve well-being (Fig. 1).

The constructivist paradigm that underlies the grounded methodology of this research acknowledges that multiple perspectives about the focal phenomena exist. Different local peoples develop diverse norms, interrelations and actions depending on their shared learning constructions (Maarleveld and Dangbegnon, 2002). A constructivist interpretation can better account for contextual differences in lived experiences.

2. Methodology

The research locale was in Labuin of Sta. Cruz, a municipality in Laguna province (Fig. 2). The choice of the study case was based on the observation that resilience is a salient variable in the lifeworld of the sampaguita growers. A wide array of relational strategies influenced resilience processes to perceived livelihood risks. The choice was also based on access to the field of sampaguita growers. Field access was established when the researcher facilitated a sampaguita farmers' field school on integrated crop and pest management (FFS-ICPM) in the research locale from March 2007 to April 2008. The FFS-ICPM was a collaborative project of the University of the Philippines Los Baños (UPLB) and Urban Harvest-User's Perspectives with Agricultural Research and Development (UH-UPWARD), together with the area's local government units (LGUs). The researcher re-entered the field in November 2008–April 2014 to conduct a research about the sampaguita livelihood system.

Qualitative and quantitative methods were used to gather research data from 34 households who have sampaguita farms. Fifteen (15) of these households attended FFS-ICPM while the other 19 households did not. The study cases were classified into four groups: 1960-1990, the first sampaguita growers; 1991-1995, the households who attended



Fig. 1. Sampaguita-rice farming livelihood.

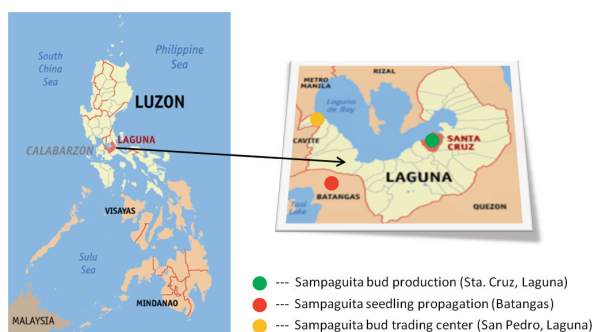


Fig. 2. The research area in Sta. Cruz, Laguna Philippines.

rice FFS and later sampaguita FFS; 1996-2007, the bud pickers and leis-makers becoming sampaguita growers; 2008-2011, the returning overseas workers, retired employees, people with no farm experiences becoming sampaguita growers. Also interviewed were 30 bud pickers with different age ranges (3 to 70 yrs old), as well as the then leaders and staff of LGUs – the governor, provincial administrator, mayor and agricultural technicians. The theoretical sampling guide developed by Draucker et al. (2007) was employed to select the cases that contained the most information-rich and relevant concept indicators for comparison needed to develop an emergent category of resilience.

3. Results and Discussion

The meagre income derived from rice and vegetable farming was not sufficient to fulfil the basic needs of families. Farm owners had total yield range of 2,500–4,000 kg of paddy rice/ha; from the total yield, 300–650 kg was paid to the contractual farmers who performed the rice planting, weeding and harvesting jobs. Income/ha was approximately P17,600-P26,800 for farm owners and P2,400–P5,200 for the contractual workers at P8/kg of paddy rice during wet seasons; and P26,400–P40,200 and P3,600–P7,800, respectively, at P12/kg of paddy rice during dry seasons. When the incidences of typhoons and droughts became more frequent, total income of farm owners ranged from P7,000–P20,000/ha in one cropping season. The income from vegetable farming was also minimal. Aside from being meagre, income was obtained only after harvesting of rice and vegetable produce. While waiting for the harvesting seasons, farmers resorted to borrowing rice and money to satisfy basic daily life's necessities. The income received after rice and vegetable harvesting was not even enough to pay debts. Incessant income shortage led to a debt trap.

Initially, sampaguita growing was an alternative income source for a few households to cope with the significantly felt poverty risk when livelihood was mainly rice and vegetable farming. As it became a primary community source of daily income, other risks were perceived - frequent pesticide spraying that caused pest emergence and resistance, human and environmental health problems; and variable weather conditions, production level and market prices (Bacud, 2013).

Risk and resilience are interactive. Resilience requires exposure to a significant risk, which it subsequently overcomes in order for a successful adaptation to occur (Ungar, 2003). Resilience processes helped the sampaguita growers to solve or minimize the adverse effects of livelihood risks. Social interaction strategies facilitated resilience building at different levels (i.e. household, community, LGU). Sampaguita growers had four domains of social interaction strategies: among the community members, with members of other communities, with LGUs and other organizations (UPLB-UH-UPWARD), and with their natural livelihood resources. Table 1 and Figure 3 show the evolved resilience processes to risks at different levels through time and the kind of social interaction strategies that influenced such resilience development. Four categories of sequential resilience processes were emerged from the research narratives: learning livelihood change, building social support, evolving self-organization and nurturing adaptation learning. Sampaguita growers aspire to expand resilience capability through agro-enterprise development.

The analysis of the main categories of social resilience manifested by the sampaguita growers was based on the resilience building framework of Marschke and Berkes (2006). The researchers identified the categories: (1) learning to live with change and uncertainty, (2) nurturing the processes of learning and adapting, and (3) creating opportunity for self-organization. The category of building social support mechanism was not identified. The evolved self-organizations for the advancement of the sampaguita livelihood were internally driven, as opposed to the externally prompted self-organizations for the Cambodian livelihoods.

3.1. Process of learning livelihood change

The category of learning livelihood change had to do with diversification in order to solve household poverty risk. Sampaguita livelihood diversification was a reactive strategy to the harsh life experienced when households had to rely only on rice-vegetable livelihoods. Learning about sampaguita growing had become a household survival strategy, given the high income benefits derived from it.

The pioneer sampaguita grower in the focal area learned about the making and selling of stringed sampaguita leis from the place that folks narrated as the origin of the sampaguita livelihood in the province of Sta. Cruz. Another pioneer household learned about the trading of sampaguita buds in San Pedro province. Income then from the sampaguita livelihood ranged from P3,000–P 7,000 per day. In spite of this, self-interest limited the diffusion of the pioneered livelihood because of fear that the price of buds would drop when sampaguita growers become many. A mother narrated, *“My daughter did not share to us that sampaguita growing is a lucrative business (Minyang).”*

Because of the improved economic status of the pioneer households, their relatives started to closely observe the sampaguita growing practices. However, the pioneers did not share to them stem cuttings for sampaguita propagation. They loaned money to buy costly seedling materials from Batangas province. Each of the kin households developed own practices of growing sampaguita. *“We are relatives but we did not have uniform growing practices since we were not sharing information to one another (Elec, Elvie).”* Individualistic poverty-coping behaviour was their means to increase household economic capital.

3.2. Process of building social support

Neighbouring households realized that the sampaguita livelihood can provide daily income. Stem cuttings were sourced from old folks who had few sampaguita plants in their backyards since they could not ask seedlings from the pioneer sampaguita growers and had no money to buy costly seedlings ready for planting. They experienced that a daily income derived from sampaguita was a means to escape debt trap. They started to give advice and

Table 1. Timeline of the evolved resilience strategies and processes of sampaguita growers

Year	Perceived Risks	Resilience Strategies	Resilience Processes	Level of Response ¹		
				Household	Community	LGU
1960s	Poverty	Bridging interaction	Learning livelihood change - observation, reflection - adoption of new livelihood - learning new livelihood activities	X X X	NA NA NA	NA NA NA
1996	Poverty Pesticide spraying Pests	Horizontal interaction	Building social support - advice and affirmation - material, financial and knowledge support - making and sharing meanings	XX XX XX	X X X	NA NA NA
2002	Poverty Pesticide spraying Pests Drought	Horizontal interaction Bridging interaction	Evolution of self-organization -management schemes of livelihood activities - conflict management schemes	XX XX	XX XX	NA NA
2006	Poverty Variable weather Variable yield Variable price Pests Diseases	Linking interaction Horizontal interaction Bridging interaction	Nurturing adaptation learning - networking - experimentation - interaction with nature	XX XX XX	XX XX XX	XX XX XX

¹X=observed, XX=strongly observed, NA=not applicable

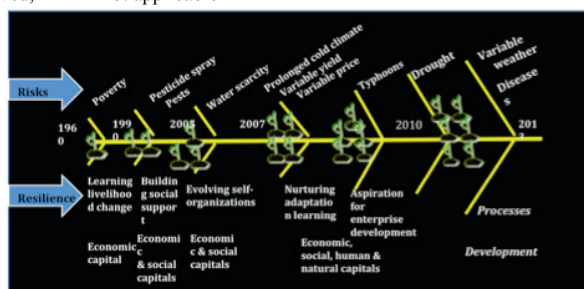


Fig. 3. Livelihood risks, resilience processes and capitals developed.

affirmations, and shared stem cuttings, financial and knowledge support to relatives and non-relatives. A constraint however was the lack of technology to improve seedling propagation and flowering.

The resilience process of giving social support was a step towards a collective action to address community poverty. Through social support, a sense of community attachment slowly developed among the succeeding sampaguita growers and pickers because each one understood their community poverty. *“We need to help each other to improve our lives. If we sampaguita growers plant more, we can employ other households as bud pickers. We are helping one another so that all of us earn income (Cenon, Merly)”*. Community attachment compelled them to make things better for their survival. Daily social interactions and the making and sharing of meanings were impetus to break down and or modify socio-economic-cultural obstacles (e.g. traditional livelihoods, individualistic behaviour, insufficient resources, hesitance to adopt new livelihood). Consequently, the economic and social capitals of the sampaguita growing community were strengthened.

3.3. Evolution process of self-organization

As more households engaged in sampaguita livelihood, there was a necessity to evolve self-organizations. The first step was a consensual organized transporting of sampaguita buds to the trading centre in San Pedro. Before this, the sampaguita growers were individually transporting sacks of buds using a passenger vehicle. A

transportation was hired later on for an easier everyday travel of all the sampaguita growers. A more organized transporting evolved when it became tiring to travel every day for about 20 years. Transporters were paid to bring the buds to San Pedro so that other farm activities can be done by the sampaguita growers after bud harvesting. Bud harvesting, measuring and packing were also organized in order for the transporters to arrive on time for the opening of bud trading.

Self-organization was also a means to avoid conflict among the bud pickers. Initially, the bud pickers had no assigned routes. More buds were harvested by those who went to the sampaguita farms early. Frequent quarrels ensued among them especially during lean flowering seasons. This prompted the sampaguita growers to give farm routes to the bud pickers to prevent the quarrels among them and to ensure that each one gets an equal opportunity to earn a daily income.

Conflicts also arose during times of scarce supply of irrigation water. Rice farmers obstructed the flow of irrigation water towards the sampaguita farms. To prevent bloodshed, the sampaguita growers irrigated first the rice farms. Next, they dug deep wells in the sampaguita farms to have water supply during dry seasons. As sampaguita do not need much water compared to rice, more rice farms were planted with sampaguita.

The process of learning to evolve self-organizations was internally driven. Organizing improved the efficiency and effectiveness of livelihood activities, as well as the social relations among sampaguita growers, bud pickers and rice farmers. It established mechanisms to solve conflicts and improve household access to the benefits arising from the sampaguita livelihood. The economic and social capitals of the local community were further improved.

With improved organizations, increase of sampaguita plants and desire for higher community income, the risk of pesticide spraying arose. Pesticides were sprayed to kill the few insects destroying the buds. Pest infestation became progressively severe due to developed resistance to pesticides. Three major pests were identified: blossom midge (Diptera:Cecidomyiidae), bud worm *Hendecasis duplifasciales* (Lepidoptera:Pyralidae) and webworm *Nausinoe geometralis* (Lepidoptera:Pyralidae). Thrips with two undetermined species (Thysanoptera:Thripidae), whitefly *Dialeurodes kirkaldyi* (Hemiptera:Aleyrodidae) and an undetermined species of scale insect (Hemiptera:Coccidae) were categorized by the sampaguita growers as minor pests. Problems about the health of human, farm animals and friendly insects as a result of frequent pesticide spraying were also reported.

3.4. Process of nurturing adaptation learning

There was no LGU support when the sampaguita livelihood started. LGU support was mainly on rice and vegetables. It recognized the livelihood when it became a daily income source for the community. However, it lacked technical capability to respond to the livelihood vulnerabilities. *“Fortunately, UPLB requested collaboration with us to conduct FFS-ICPM. There was an opportunity to provide assistance to the sampaguita growers (LGU).”*

By agreeing to network with the LGU-UPLB-UH-UPWARD, the sampaguita growers learned new knowledge. *“We learned about the pests, friendly insects, proper selection and use of pesticides (Jun, Felix).”* Experimentation, group sharing of observations, and interaction with the context or the environment in which their livelihood activities take place nurtured the new learning. They experimented the effects of learned technologies – seedling propagation, use of bio-fertilizers, water management to prevent death of sampaguita during flooding and adaptive pest management. The effects of experimentations, which were shared among the sampaguita growers, facilitated collective and adaptive actions to environmental condition which was becoming more variable while solving other perceived risks (i.e. decreasing production, resistant pests, new diseases, health deterioration).

The evolved adaptive learning showed cohesion of perception (i.e. variable environmental conditions), values (i.e. desire for good health) and action (i.e. minimal or no spraying). *“We sprayed and sprayed before the FFS. We did not know that we are killing ourselves and our children. The friendly insects and farm animals also died... We thought that the variable weather conditions in our locality is affecting sampaguita flowering. We decided that we no longer spray pesticides. There are still many buds even during cold seasons... Our new practice is to inspect the leaves and buds every day, crush with our hands the worms and remove rotten buds (Tony, Ato, Cenon).”*



Fig. 4. Bud characteristics in sampaguita (Photos by: ST Bacud)

The adaptation learning of the sampaguita growers is in accordance to the contention that reality construction happens most effectively through cognition which involves a coherence of perception, emotion and action. Equally important is the correspondence of the cognitive elements with the context. The cognitive process of perception (interpretation of environment), emotion (desired state or values), and action can help people to deal with the external environmental domain of existence in order to adapt and survive (Roling 2002). The constructivist paradigm which underlies a social learning perspective explains that people make sense of their world and socially construct it when there is interaction among them, their activity, and the context in which their activity takes place (Maarleveld and Dangbegnon, 2002). The new learning of the sampaguita growers had paved the development of natural capital alongside with the improvement of economic, human and social capitals.

A creeping risk is the occurrence of abnormal small buds with short or without corolla base (Fig. 4b) and bud browning (Fig. 4c) during cold and humid conditions. Fig. 4a is a picture of healthy buds. With more variable weather conditions, the abnormal and browning bud symptoms are becoming risks as they significantly reduce bud harvest. Sampaguita growers discussed that there is no solution to the risks since they are caused by cold and wind stress. Experiments in UPLB elucidated the presence of causal organisms for the browning disease (Bacud and Balidion, 2013). Morphological and culture characters of fungal isolates obtained from infected petals and sepals suggest similarities to *Colletotrichum* sp. Management schemes for the disease are being tested.

3.5. Aspiration for resilience capacity expansion

During peak flowering seasons, buds are left to rot in farms to prevent dipping of price. Because of this, oil extraction and production of other jasmine product lines are aspired in order to increase economic opportunities. Partnership with LGU-UPLB helped them access technologies to improve sampaguita production, but lack of financial resources constraint the construction and piloting of a community-based oil extraction facility. Their LGUs committed financial support for their aspiration but until now has not yet materialized. Although a national flower of the Philippines, sampaguita is one of the least prioritized crops for RDE funding due to a policy focus on food crops. Sampaguita is not a food crop but it provides peoples livelihood that enable them to feed themselves.

4. Conclusion

The grounded resilience processes to livelihood risks (i.e. poverty; frequent pesticide spray that caused pest emergence and resistance, human and environmental health problems; variable weather conditions, production level, and market prices) had four sequential phases: learning livelihood change, building social support mechanisms, evolving self-organizations and nurturing adaptation learning. Decision-making as risk-solving is a salient theme that underlies the undertaking of the resilience processes. Decision-making was influenced by external facilitating social interactions (i.e. among community members, with members of other communities, with LGUs and other organizations, and with natural resources). The contextual resilience processes has transformative implications - from individual into communal risk-solving, and from unsustainable into regenerative livelihood practices.

The sampaguita growers showed capability to adapt and survive the compounded negative effects of livelihood risks. A shift in the poverty dimension (i.e. higher income) of the risk landscape, achieved through mutual support, enabled them to enjoy a degree of choice to further interests and opportunities (such as engaging in livestock

farming and small store business). Successively, sought interventions in the form of training and material support from vertical networking with LGU and other agencies expanded the capability to gain understanding about other risks such as pests, diseases, chemical spraying and variable climate effects on production. There is an agency element of resilience response, wherein a degree of freedom from chronic poverty led to a certain degree of freedom to act on other risks. Based on experiential understanding of the interaction of risks, there was a range of choices from which to base collective and adaptive risk-solving decisions.

This research elucidates the importance of development interventions that strengthen local peoples' resilience capability for a sustainable livelihood. First, a shift towards a policy intervention that focuses not only on the production of food, but also on the ability of peoples to procure the additional food they require. Second, a shift to a social perspective that focuses on inclusion and enhancement of peoples' capability to secure their own livelihoods. Based on capability approach (Sen, 1990; Deneulin 2006), policy initiatives for sustainable livelihoods must fit with local peoples' valued livelihood strategies to help them better respond to the constraints and opportunities affecting their poverty and well-being. Development interventions necessitate learning about a community's risk factors as well as resilience factors prior to any sustainable livelihood program to ensue. This is translated into learning from the people and building on what they have. These development interventions are informed by the cradle-driven approach for sustainable livelihood espoused by Hounkonnou (2002).

Acknowledgements

This research, conducted as part of a PhD dissertation, received funding support from the Commission on Higher Education-Philippines and the Crop Protection Cluster (CPC), College of Agriculture (CA), UPLB. We thank the members of the sampaguita growing community who participated in the research. Dr. Sheryl A. Yap, faculty member of CPC-CA-UPLB, assisted in the taxonomic identification of the sampaguita pests.

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