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SYSTEMIC INDICATORS FOR AGRICULTURAL AND RURAL COMMUNITIES IN DEVELOPING COUNTRIES

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ABSTRACT

Community indicators have been of special interest of international scholars. They are vital for community development as their role in monitoring of community development, and managing and preserving a community's wellbeing. Community indicators provide information that reflects what the community cares most about - its values. Thus, each community needs to 'own' its indicators to orientate it towards what is of most value, and to help it on the way to achieving sustainable outcomes. There have been a great deal of work on community indicators for urban areas in developed countries, but there have been relatively few studies in relation to rural communities, particularly in developing economies.

Life in rural communities in developing countries reflects many special challenges that characterise the complexity of rural systems. The communities need their own indicators to reflect their reality, and these community indicators require a holistic and integrated approach that can capture community wellbeing comprehensively.

This thesis presents and explores the development of a participatory systems-based framework for identifying community indicators in rural areas in developing countries and principles for applying this framework effectively in these areas. The framework is developed by using the abductive and participatory action research process, underpinned by the principles of complexity, complex living systems and sustainability, and informed by Wells and Mclean's *One Way Forward* model (2013) and Meadows's levels of system *Leverage Points* (1999). This approach aims to address the difficulties that have challenged scholars in developing appropriate indicators for these communities, and then explore practical facilitation of the choosing and effective use of the indicators.

The participatory systems-based framework for identifying community indicators is an iterative sharing, co-learning and refining engagement cycle. It enables the communities to appreciate and adapt to the emergent properties of complex community system, which simply reflect the way our world functions. This is a practical, systemic framework to help communities to identify influential, lead indicators that assist the communities to track what is unfolding in the process of development, and make sound decisions - seen as experiments- directed towards sustainability. Moreover, it enables the active and effective engagement of all community members, regardless of status and level of wealth, to share, collaborate and co-learn from 'experiments' that build a culture of ownership, self-management and self-development.

On the basis of the findings in relation to this framework's application in two rural communities in Vietnam (research sites), it might also provide support for sustainable development in organisations and urban communities.

DECLARATION

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Nguyen & Wells 2018, 'Systemic Indicators for Rural Communities in Developing Economies: Bringing the Shared Vision into Being', *Systemic Practice and Action Research*, vol. 31, no. 2, pp. 159-177

Nguyen PT, Wells S, Nguyen NC 2018, Systemic Indicators for Rural Communities in Developing Countries: Empirical Evidence from Vietnam, *Social Indicators Research* (under review)

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Chapter 1

INTRODUCTION AND LITERATURE REVIEW

1.1 Introductory Background

1.1.1 Importance of Agriculture and Rural Development (ARD)

An increase in demand for food is one of the greatest development challenges the world is facing due to a growth in income, population and urbanization. The demand for cereals and meat is respectively estimated to be 2.5 billion and 327 million tonnes by 2020 (Freeman et al., 2005; Rosegrant et al., 2001). The agriculture sector plays a vital role in meeting this demand for food security. In developing countries, agriculture is of special importance to about 800 million people residing in rural areas and relying on agriculture for their livelihoods and income (Garcia et al., 2006; Herren, 2011; World Bank, 2014). In addition, agriculture, as a socio-economic activity, contributes to the growth of the national economy. For agriculture-based nations, agriculture may contribute 25% of the gross domestic product (GDP) (Herren, 2011) and attract 65 percent of the labour force (World Bank, 2007). Moreover, covering approximately a third of the world's land surface, and using sunlight, water and other elements of the environment (Irish Aid, n.d; World Bank, 2007), agriculture and the natural environment have a relationship of interdependence. Agriculture depends on the quality of the environment for its existence and sustainability and, in turn, can either sustain or degrade the environment (Herren, 2011). By applying environmentally-friendly practices, agricultural production can maintain natural resources and make farming systems in rural areas less vulnerable to climate change, contributing to sustainable rural development.

Although agriculture production is very important for the whole world (not only for rural areas where farming activities occur) as mentioned above, the majority of rural people

are still living in hardship, poverty and with low levels of well-being. It is reported that there is a range of the poor with incomes below $1.25 to $2.00 per day, residing in Sub-Saharan Africa and South Asia (Sumner, 2012). It is also estimated that approximately 795 million people (about one ninth of the world's population), of which almost all of them (780 million) live in the developing regions, are suffering from malnutrition (World Hunger Education Service, 2015). Even though there has been a decline in overall poverty levels, it is not uniform, because of inequality in distribution and accessibility of assets (e.g., land, education and capital) (FAO et al., 2012, 2015), and because the resource gap between urban and rural areas has been widening (Herren, 2011). Rural areas, where 78% of poor people in the world reside, are still struggling to improve their situation (FAO et al., 2015; International Labour Organization (ILO), 2012; World Bank, 2014).

Recognizing the importance of ARD in developing countries, there seems to be a range of development interventions that are typically designed for this sector to improve ARD's contribution. However, although many management interventions are implemented to improve ARD, the observable and identifiable indicators of progress are noticeably absent and the impacts of these interventions are not effectively tracked (GDPRD et al., 2008; Gertler et al., 2011; Muller-Praefcke et al., 2010). This not only leads to wasting of donor investments in developing countries (Brooks, 2006), but also results in a lack of relevant information and data that can be used to change or adapt the practices when necessary.

In addition, rural community development has experienced the difficulty of sustainability in the developing countries. Sustainability has become a major challenge that many donors, such as the World Bank and the Asian Development Bank, have been concerned about (Khan, 2000). This matter has been seen as complex because of both internal management and uncontrollable external factors (Khan, 2000), as the interventions

become a part of rural complexity where a range of issues (such as healthcare, poverty, farming production, work pressure and environmental protection) forms part of the agricultural and rural system. These issues are "interacting" in a highly interconnected way in the global web of ecological, economic, social, cultural and political processes (Jackson, 2010; Thompson and Scoones, 2009). Rural systems, including community systems, have thus become increasingly complex, producing unpredictability in the outcomes and sustainability of development endeavours. It follows that both actions and the indicators of progress that monitor them should be identified in ways that reflect the connectedness, complexity and unpredictability of these systems.

1.1.2 Community Indicators

The concept of indicators varies greatly in the literature. The variation is found in different focuses (i.e., policy, project, community, issue, and theme) and the different points of view that indicators reflect. Generally, indicators provide information that help us understand the condition of what we care about or need to influence, but are unable to capture directly and entirely, in order to monitor progress, as well as to make decisions that help to shape the future. These pieces of information could be "small", but have to be able to "reflect the status of larger systems" (Norris, 2006) and to show changes and trends of systems over time (Meadows, 1998; Norris, 2006).

In about 1910, the Russell Sage Foundation took the initiative to investigate community indicators by conducting local surveys to assess social conditions through measuring factors in education, public health, recreation, crime and other social factors (Cobb and Rixford, 1998). This event initiated a shift from an economic focus to social trends, and then to community indicators in the late 1980's and early 1990s, with attention moving to integration of individual perspectives to reflect community wellbeing (Sawicki and

Flynn, 1996). Indicators and information in communities become valuable in the efforts to achieve sustainable outcomes (Gahin and Paterson, 2001; Gahin et al., 2003). Perspectives focussing on separate dimensions (social, economic or environmental) have been gradually replaced by more holistic indicators, reflecting community wellbeing.

Concepts and functions

Phillips (2003, p. 2) defined community indicators as "bits of information that, when combined, generate a picture of what is happening in a local system". This definition suggests that a combination of community indicators can provide insight into the whole community, rather than just reveal the status of individual elements. That would ensure indicators that are comprehensive and reflect all facets of sustainability in community development. Phillips' definition also suggests that community indicators refer to the interests of all members of a community, rather than individuals. Such indicators are perceived, designed, developed and used within a community and by its members. Community indicators reflect the social characteristics of the communities whose progress they monitor.

Much of the literature focuses on the role of community indicators. As a measuring instrument, community indicators provide information about the status of community quality of life, past trends and current realities, and can be an aid to dialogue about a future direction (Gahin and Paterson, 2001; Phillips, 2003; Swain and Hollar, 2003). As monitoring tools, community indicators allow communities to stay on track when progressing towards an agreed vision (Gahin and Paterson, 2001; Swain and Hollar, 2003; Wells and McLean, 2013; Work Group for Community Health and Development, 2015). They can also be a tool for community engagement and participation (Gahin and Paterson, 2001) in helping to develop an understanding of the issues and the ability to address

community issues from a holistic perspective. The process of identifying community indicators involves different people from different sectors and positions within a community and can build important relationships. The trust developed in sharing good community relationships can be helpful in generating collective decisions. This also results in transparency and accountability in planning, implementing and monitoring actions within communities. In essence, community indicators capture important information that brings issues to the collective attention (Gahin and Paterson, 2001) and can affect the behaviour of a system (Meadows, 1998) – influential indicators can, themselves, change communities without further intervention.

Approaches to the creation of indicators

It appears that while the role of indicators seems to be widely agreed upon, the way to identify them is still debated. Much work has been undertaken with the aim of developing "ideal" community indicators. Many sets of indicators have been developed, such as The United Nations Millennium Development Goals and Indicators, OECD Wellbeing indicators, European Union's Social Indicator Framework, Canada Wellbeing Measurement Act, the UK Sustainability Indicators and the Happy Planet Index. They focus on a comprehensive picture of wellbeing, but have been set from 'top down' at a regional and national scale. For community development, they may not effectively and sufficiently reflect important considerations at the local community level, although they could do so at the level of macro endeavours (Reed et al., 2006; Riley, 2001). Indicators owned by communities are likely to play an essential role in their self-development.

"Measurable" seems to be a standard feature of indicators and numbers have very often been involved in indicator development (Norris, 2006), although both quantitative and qualitative indicators find a place in the literature (eg., Boarini, 2011; Gahin and Paterson,

2001; Meadows, 1998; OECD, 2015; Phillips, 2003; Progress Redefining and Network Earth Day, 2002; Wells and McLean, 2013). Numbers cannot always adequately reflect the multifaceted wellbeing of a community, including intangible subjective elements, so some favour indicators that are simply observable (Progress Redefining and Network Earth Day, 2002; Wells and McLean, 2013), to ensure that they reflect the full range of community values. Thus, it is necessary, in practice, to find an effective way to develop and use both qualitative and quantitative indicators, especially qualitative indicators that can reflect and value what is important in whole communities.

Community indicators seek to reflect the perspectives of all members of a community and multiple facets of community wellbeing. That requires the participation of community members in the whole process of indicator development (Leeuwis, 2000; Mathbor, 2008). In addition, participation is actually connected to community wellbeing, which reflects collective, rather than individual, feelings and actions helps to build social relationships and networks (Haworth and Hart, 2007; Sirgy et al., 2013). Besides, wellbeing embraces the value of democracy, which is one of the obvious features of participation (White and Pettit, 2004). Therefore, participatory efforts enhance wellbeing and this can happen if indicators are perceived, developed and used within a specific community and by its members (Rapley, 2003; White and Pettit, 2004). Nevertheless, so far projects seem to focus just on improving people awareness of participation, (Sirgy et al., 2013), and communities still act as invited players (Eversole, 2010).

A shared vision often comes first in initiatives to establish community indicators (eg., International Institute for Sustainable Develoment (iisd), 2013; Norris, 2006; Redefining Progress et al., 1997; Salvaris, 2000). The literature suggests various ways by which to build a vision, often starting with a question. Meadows (2014, p. 11), in her presentation

on envisioning a sustainable world at the 1994 meeting of the International Society for Ecological Economics in San José, Costa Rica, invited her audience to consider the question of "what you really want, not what you think you can get". It was an open-ended question, encouraging the creativity of those involved. This question is used by Wells and McLean (2013) as the starting point for their envisioning process. A co-created vision is broadly conceived as emcompasing shared values and mututal goals (Li, 2005), but within boundaries, as a vision has to be "honed by rationality" to become a "responsible vision" (Meadows, 2014, p. 11). Athough some principles have been proposed for guiding practitioners to articulate a shared vision, we must ensure that, in practice, we do not constrain the creation of a "values-rich story" (Meadows, 2014). The process of envisioning, while true to the principles, should be flexibly applied to reflect the context and characteristics of different commununities.

While Innes and Booher (2000) assumed community indicator projects typically focused on outputs rather than the process of indicator production and did not present strategies for developing and linking indicators to actions, Gahin and Paterson (2001) believed that attention should be paid to the process, not just outputs as had been the case in previous work. They also pointed out that community indicators projects benefitted from democratic participation, involving different stakeholders from various sectors. Innes and Booher (2000) also observed that, to date, community indicators have been little used, resulting in their seldom being an influence on practice or a tool for policy making. However, indicators have been shown to be an effective instrument for community engagement, participation and general education (Gahin and Paterson, 2001; Innes and Booher, 2000). It seems that community indicators have more influence on policy making if the decision makers and users are truly involved in the process of indicator production.

We can observe a move towards this kind of process, but there is room to give fuller expression to this important principle.

1.1.3 Lack of application to rural areas in general and developing countries in particular

The literature reveals that communities throughout North America (Canada and the United States), Europe and Australia, interested in sustainability, have been developing and applying community indicator frameworks or incorporating indicators into their sustainable programs. More of these programs have appeared in urban areas than rural ones. This coincides with the observation of Phillips (2003) that little information about building rural community indicators can be found. This author cites a few existing projects, including the Central Texas Sustainability Indicators Project, the Pueblo Community Indicators Project by the Healthy Pueblo Communities 2010 organization, and the Northern New England Sustainable Community Project.

The literature indicates that more community indicator projects are implemented in developed countries, as mentioned above, than in rural areas in developing nations. This may be because such reports are not published or posted on the Internet. However, the current view is that “rural areas are particularly challenged when faced with designing and implementing community indicator systems” (Phillips, 2003, p. 33) and “rural community development is hard to do” (Holton, 2007). While food and income are still the priority for local rural people, other factors linked to sustainability are paid less attention. However, to improve rural life, it is necessary that rural communities are helped to recognise the importance of their own indicators, and easily identify and effectively use them. Norris (2006) argues that “communities develop and use indicators because they need them”. Without community indicators, rural communities lack systems

feedback that can help them to make decisions and to manage their communities with maximum care.

1.1.4 Past shortcomings in identifying indicators

Reductionism

Many studies point out that the clearest weakness of traditional approaches is that they focus on studying components of a system in separation (Bosch et al., 2007; Mai and Bosch, 2010; Wells and McLean, 2013). Considered as a machine, a community can be divided into smaller parts to study and its functions understood as the sum of its separate parts. In addition, conventional approaches explore the system's structure only, and do not pay attention to its functions and operations (Gharajedaghi and Ackoff, 1984). They may ignore the reality of communities and the vital elements within them because they reduce "the system down to a very simple set of interactions" (Adams and Cavana, 2009, p. 5). This leads to limited knowledge in individuals (Sterman, 2001), which is then used to deal with complex issues. This in turn results in the many "side-effects" or perverse outcomes of 'solutions' proposed for complex problems (Sterman, 2001; Vester, 2012). Reductionism may be useful for mechanical systems, but, for complex living and interactive systems, it has resulted in more failures than successes (Meadows et al., 2004; Wells and McLean, 2013), as "the parts of a system cannot survive without the whole" (Meadows, 2002, p. 5). This suggests that indicators underpinned by reductionism will struggle to reflect the vitality and behaviour of a whole community.

Quick fixes (rushing to action- treating the symptoms - before thinking)

Traditional approaches often look at visible and obvious symptoms of problems to find immediate solutions through linear thinking and generate only "quick fixes" (Bosch et

al., 2013a; Bosch et al., 2013b; Maani, 2013). Root causes are often difficult to perceive and to comprehend, leading to “short-term fixes” for “long-term problems” (Senge, 2006). In other words, approaches based on linear thinking define the tangible matters, but do not provide insight into problems with non-linear cause-effect relationships within systems. Hence the solutions based on linear approaches often result in a temporary treatment of the symptoms or even create counter-productive consequences (Maani, 2013). In other words, “today’s problems” might be created by “yesterday’s solutions” (Sterman, 2001). Monitoring indicators that are based on this kind of approach could help to measure the outputs of an intervention, but would probably fail to capture feedback on the implications of the intervention for the whole community.

Top-down approaches

Much of the literature points to the shortcomings of top-down (expert-centred) approaches in rural community development, driven by the voices and decisions of outsiders (Bradley and Schneider, 2004). Top-down interventions are usually designed and implemented by people who live in cities, become influential in their field, but are not directly affected by the consequences of their decisions. The main ‘beneficiaries’, farmers and rural communities, often passively receive material support (subsidies, supportive allowances, labour fees) from implementing agencies in return for conducting the activities of the intervention (e.g., attending training courses, applying a new technique or planting a forest). Playing a role as passive beneficiaries, the communities probably feel that the interventions do not belong to them and thus, unsurprisingly, they are not responsible for monitoring the progress of the interventions. Indicators identified in expert-led approaches for monitoring and evaluating interventions are also mainly used by experts, hence the assessment of success is made by them, rather than by the

communities who are the objects of the interventions. Furthermore, the indicators developed tend to be based on international or national definitions, criteria and data, which may not be responsive to local issues. This often leads to a failure to monitor the things that really matter in local communities (Reed et al., 2006; Riley, 2001).

Not true participation

A number of interventions that claim to have used participatory processes, are not truly community based. In these, the communities just play the role of informants answering the questions of outsiders or consultants, who are employed to provide advice/thoughts when requested by decision makers (Eversole, 2010). Moreover, the projects seem to focus on awareness of participation rather than actual involvement of the people (Sirgy et al., 2013). As a result, similar to the consequences of top-down approaches, communities do not see a clear link between interventions, indicators and benefits for themselves (Freebairn and King, 2003), and, therefore, may not fully involve themselves in the interventions. This reconfirms that it is essential to gain genuine community participation in the whole process of sustainable development, including identifying community indicators and using them.

Limitations of linear frameworks

Despite creating room for the participation of rural communities during the process of identifying indicators, many proposed frameworks have been adversely criticised for the assumptions they make around cause and effect. Logical frameworks (Logframe) is an example. Logframe provides the structure for identifying goals, objectives (purposes) of a project/program, activities taken to achieve them and inputs needed to conduct the activities (Sector for programming and management of EU funds, 2011; World Bank,

2004) based on a sequence of cause-effect relationships between the strategic elements (levels) (Coleman, 1987). Logframe is promoted as being an effective framework, providing a clear outline of the expected outcomes to be achieved and the required indicators to guide intervention management (Guijt and Woodhill, 2002). However, the means of verification and the indicators identified by using logframe are mainly framed around the desired impact, and do not take into account negative and/or unintended consequences that may occur (FASiD, 2010). The indicators do not cover all important aspects (Hjorth and Madani, 2014) and are not updated to reflect changing conditions (World Bank, 2004). They do not encompass the emergence and non-linear behaviour typical of complex environments.

Numbers are not enough

Numerical indicators have been widely used in monitoring and evaluation. They have proven to be useful for measuring economic factors. GDP or the amount of money earned may reflect the state of the economy, collective or individual. Key Performance Indicators (KPI's) – a set of quantifiable measures - have often been used to review and gauge an organisation's performance and progress against its goals (Reh, 2015). Numbers have been used as indicators in the monitoring and evaluation of interventions because of the need for "measurable" criteria (eg., in Gertler et al. (2011) and Muller-Praefcke et al. (2010)). Quantitative indicators help to acknowledge and quantify parts of a system, but fail to grasp many other factors that strongly influence a community's overall quality of life, such as security, educational services, local collaboration and satisfaction (OECD, 2011, 2015; Wells and McLean, 2013). Numeric indicators are often used to measure what has already happened. That means they lag outcomes, but may not be able to reflect what is unfolding in the whole community (Wells and McLean, 2013).

Over dependence on modelling with technologies

Another soft spot in previous approaches is their tendency to rely too heavily on modelling technologies. They can help to explore possibilities, but the danger lies in treating them as predictive tools. Computers are not able to capture the complexity of evolution in nature (Ostrom, 2009) or to master the flexibility of human beings and their knowledge (Hansen et al., 1999; Kurtz and Snowden, 2003), even though "in the world with uncertainty and many stakeholders, it is essential to understand the perspectives of potential users" (Hjorth and Madani, 2014, p. 134). The assistance of computers is helpful in allowing us to find optimal solutions in some almost static cases, but for the identification of wellbeing indicators in evolving communities – indicators that are typically more subjective, nuanced and changeable – dependence on computer modelling remains problematic.

1.2 Conclusion, research gap, research questions and objectives

Community indicators are one means by which we can integrate the various facets of everyday life that contribute to community wellbeing. Numerous indicators have been created, but the limitations of the various approaches that have given rise to them, demand that they are continually challenged and refined, depending on different purposes, contexts and scales. And although there is broad consensus on the role performed by community indicators, the best way to identify them, in the context of sustainable development, is still debated. People tend to seek "ideal" indicators, but that seems to be unattainable.

Much of the work on community indicators relates to urban areas in Europe, North American and Australia, but endeavours to build effective community indicators for

sustainable development in rural areas, especially in developing countries, where food security and environmental protection play a central part, have so far fallen below expectations (Cobbinah et al., 2015; Nguyen and Wells, 2017; Phillips, 2003). Articles on systemic approaches can be found in the literature on sustainable community indicators. They acknowledge the necessity of more holistic approaches to understand the whole system, using indicators that reflect community health and wellbeing, rather than focus on individual parts. But much work remains to be done to establish practical processes for establishing systemic community indicators that are "little but mean a lot" and can accommodate the complexity of rural life.

The identified research gap can be addressed by asking the following questions and pursuing the following objectives.

Research Questions

(1) How can a systemic approach be used to identify effective community indicators for rural communities in developing countries?
(2) What are the principles underpinning the identification of systemic rural community indicators?

Aims/Objectives of the Project

This research aims to explore a practical systems-based framework for identifying community indicators that can monitor progress towards the ultimate goals of rural communities and facilitate real engagement of community members in the development process. The specific objectives are:

(1) To explore a process for the development of systemic community indicators that can reflect the ultimate goals of rural communities, in a systems context, expressed as community wellbeing;
(2) To identify a set of systemic community indicators in two Vietnamese rural communities, acknowledging that the indicators will have different influence, depending on their level of leverage;
(3) To establish principles for identifying and ranking systemic indicators for tracking the progress of community interventions.

1.3 Theoretical Framework and Methods

1.3.1. Theoretical Framework

a) Complexity Theory

Dent (1999, p. 5) defined complexity science as "an approach to research, study, and perspective that makes the philosophical assumptions of emerging worldview- these include holism, perspectival observation, mutual causation, relationship as unit of analysis…". This approach assumes that anything is a part of a system, existing and interacting in interrelationships and interdependencies amongst multiple elements within its system, which are also affected by a range of unpredictable changes in the environment (Meadows, 2008; Mitleton-Kelly, 2003; Senge, 2006). The system is not a closed system with impermeable boundaries but is also a part of another bigger system (Katz and Kahn, 1978). Systems are uncontrollable, future changes are unpredictable, and interventions, although directed at one part of the system, affect the system as a whole and typically produce a range of unintended consequences. This necessitates a whole-of-system approach to study.

In contrast to linear approaches, which tend to assume that this cause will directly have that commensurate effect or those effects, complexity approaches suggest that cause-effect relationships are nonlinear and uncertain. The relationships are circular and the arrows that are often used to indicate the directions from causes to effects, may go in either direction (Forrester, 2009; Williams, 2010). In other words, the "cause" may lead to the "effects" and the "effects" may respond back to the "cause", then result in other effects. Thus, a problem cannot be solved in isolation, as it does not exist in isolation, but is imbedded in a system.

There are many constituent elements in a rural community, such as the farming system, education services and heath care, and they interact and function within a rural system in a complex web of processes and dynamic interactions that have ecological, economic, social, psychological, cultural and political dimensions. A decision, even though small and aimed at a specific problem, will create an effect on the whole system. That is the reason why individual indicators (reflecting social, environmental, economic issues) are dissolved into community indicators so that they can reflect community well-being.

Seen through the lens of complexity, a community functions as a system in itself, and, as a living organism, it can evolve and adapt to the change of its environment (Innes and Booher, 2000; Wells and McLean, 2013). We cannot be certain exactly what future community will emerge (Meadows, 2002; Wells and McLean, 2013), and therefore exactly what community indicators are the best for monitoring (and influencing) community changes. Hence, the community's decisions to take action should be treated as experiments. New learning and insight can be gleaned from experimentation and feedback, by honouring the nature of complexity and the self-organisation of living systems.

b) Sustainable Development

Sustainable Development

The concept of sustainable development emerged in the 1980s, as a response to the fact that the population has been growing fast, but the planet has not been developing the means to meet the need of the materials and energy necessary for the sustainable functioning of the population (Bridger and Luloff, 1999; Duran et al., 2015; Meadows, 1998; Roseland, 2000). This problem is not about economic, social or environmental issues, considered separately, which is why narrow business or technical solutions have failed (Roseland, 2000)– it encompasses all of those facets, requiring more holistic solutions. It implies that development and sustainability should be considered together on a global scale (Meadows, 1998).

In 1987, the Brundtland report - Our Common Future, published by the World Commission on Environment and Development, popularized the term of sustainable development by presenting a basic definition "development which meets the needs of the present without compromising the ability of future generations to meet their own needs." (Drexhage and Murphy, 2010; UNECE, 2013; WCED, 1987). In the context of growing population and the use of natural resources, rather than focusing on the economy regardless of damaging the environment and exhausting its constituents, or pushing environmental protection into conflict with economic growth, sustainable development aims for a "balance between economic growth, quality of life and environmental preservation medium and long term without increasing consumption of natural resources beyond the capacity of the Earth" (Duran et al., 2015). In terms of social justice, sustainable development implies the distributional equity of well-being not only across time (present generation and the next future), but also space and conditions (different

places-rural/urban areas) (UNECE, 2013). This concept has now become a globally accepted principle (Drexhage and Murphy, 2010; Ishwaran et al., 2008) for informing a paradigm shift in decision making for development practices.

It has been widely endorsed that sustainable development brings together three pillars reflecting the dimensions of economic development, social equity, and environmental protection (Drexhage and Murphy, 2010), although some scholars have added other elements into this term, for example spirituality (Chile and Simpson, 2004) and politics (O'Connor, 2006). The traditional perspective that each dimension is separately studied has proved the failure in sustainable development. It thus has been increasingly agreed that the more the dimensions are integrated the more sustainable the development can be (Figure 1). Over the years, sustainable development have become a visionary paradigm and contributed to shifts in development process. However, sustainable development in practice is still elusive, uncontrollable and faces difficulties (Drexhage and Murphy, 2010). In fact, unsustainble development continues to be reflected in the increased frequency and scale of climate change, economic cirsis and social problems. These trends suggest that sustainable development theories and practices to date have fallen well short of aspirations. That in turn reflects the ineffectiveness of actions taken and of the indicators designed to illuminate the real impact of those actions.

Sustainable Rural Community Development

Rural community development, especially in the Third World, has received close attention from the world community, because rural communities are places where the poor, weak, isolated, vulnerable and powerless reside and are subject to harsh living conditions (Chambers, 1983). A range of international agendas and initiatives have been introduced, aiming to improve the quality of life of rural people. Using top-down

approaches, the interventions have been designed and led, based fundamentally on the perspective of outsiders, such as academic researchers, aid agency personnel, volunteers, consultants and other professionals, and have enjoyed only limited success. Robert Chambers, author of a valuable book on rural development, suggests that "Outsiders under-perceive rural poverty" (Chambers, 1983, p. 1), because "direct rural experience of most urban-based outsiders is limited to the brief and hurried visits, from urban centres, of rural development tourism" (Chambers, 1983, p. 2). This is probably one important reason for the historically poor sustainability of rural development.

Chambers (1983) and many other rural developers highlight the merits of pushing the lowest ranked rural people up to the first priority in the development agenda and initiatives. They understand their own situations, what they want and what they currently have, which outsiders are unable to capture when working for a short time only in rural communities. Importantly, rural people in a particular community have their own vision and that is the reason why they should be the main players in the development process, responsible for their own lives. This view was the fundamental principle for participatory (bottom-up or community-based) approaches, which require the active engagement of rural communities, but also need sensitive and selective support from outsiders who have a passion for facilitating the processes by which rural communities articulate their own vision and bring it into being.

The words "quality of life" and "well-being" have increasingly been the focus of discourses on development (Chambers (1995), OECD (2011), Chambers (2012), and Morton and Edwards (2013)), instead of "poverty", which received much attention in earlier literature. It means that rural development does not focus on food and income only, but on incorporating issues such as the social interaction of human beings and

environmental quality, as reflected in a "triple bottom line", to ensure sustainability. Chambers (2012) argues that poverty is just one of the factors (along with social inferiority, isolation, physical weakness, vulnerability, seasonality, powerlessness and humiliation) preventing people from reaching well-being. Well-being includes not only objective well-being – necessary physical factors (such as education, health and employment) – but also subjective elements like feelings and the appreciation of life - satisfaction, freedom, happiness, power and self-respect (Boarini, 2011; OECD, 2011). This requires indicators – small things we might observe – with the capacity to capture movement towards a shared vision that reflects these big aspirations.

c) **Participatory Approaches**

Participatory approaches were first developed in the 1980s in response to the problems encountered in applying "top-down" approaches (Bradley and Schneider, 2004). These approaches, which are based on stakeholders' problems and aspirations (International Fund for Agricultural Development (IFAD), 2002), have brought significant positive changes to development practice (Bradley and Schneider, 2004). Participation refers to the active engagement of all stakeholders in the whole process, not only in taking action, but also in developing solutions collaboratively (Handley et al., 2006; Wenger, 1999). Full participation of all stakeholders (especially the beneficiaries - insiders) allows for the improvement of mutual understanding and accountability (Maani, 2013; Maani, 2002) as well as helping to develop a sense of ownership of the decisions that are made (Ha et al., 2014; Stain and Imel, 2002).

Although participation has been increasingly recognised as a central principle of community development, it is still challenging in practice and the subject of critical scrutiny by many scholars. Eversole (2010) argues that participatory development

projects/programs are still funded and managed, and may be encouraged, by outsiders (researchers, practitioners and experts in organisations). Within the projects, the participation of the communities limit at low level and change cannot be gained from "below". Thus, a community's active participation cannot be achieved and stops at awareness rather than behaviour, resulting in unsustainable development. A participatory framework is required that can move community development towards self-organisation and sustainability.

d) *One Way Forward* Model

This framework is the principal starting point for the proposed research. Sam Wells and Josie McLean (2013) introduced "*One Way Forward*" (Figure 1) as a possibility for facilitating "transformational change for sustainability" in organisations. It is underpinned by the principles of complexity, including pervasive and "irreducible" uncertainty (Meadows, 2002). Through the lens of complexity, this framework enables organisations to understand and influence systemic change towards sustainability, through strategic experiment.

Figure 1: *One Way Forward* Model
(Source: Wells and McLean (2013, p. 73))

Rural communities face many challenge to achieve sustainable development. Especially in developing countries, they often suffer from poverty, vulnerability, isolation and powerlessness (Chambers, 1983; Ha et al., 2016) that prevent rural people from reaching a state of well-being (Chambers, 2012). It is likely that those experiences cause the residents to be concerned more about short- term personal demands than long- term collective issues and community wellbeing. That leads to unsustainable development.

Although *One Way Forward* was conceived in organisational settings in industrialised economies (which is very different from rural communities in developing countries). It enables the flexible use of participatory approaches in the process of caring broadly for a whole organisation, rather than for isolated parts (Wells and McLean, 2013). In addition, *One Way Forward* proposes a process of fully engaging and owning the collective process and its outcomes, with "no beginning or end, but constant becoming" (Wells and McLean, 2013, p. 70). It helps the organisational community to become a self-reliant and adaptive system, by connecting the system to more of itself (Wheatley, 2006, p. 145).

e) Leverage Points

Changes in one area of a system can generate either a positive or negative impact on other parts, the whole and finally on other related systems (Patterson, 2010). An improvement for the whole may sometimes be inconsistent with short term benefits to a part of the system (Meadows, 2002). The parts, however, live in the whole and embrace similar long term interests (Meadows, 1999). Systems contain many parts, but its parts are not equal quality. We can intervene at various places in the system to achieve change in the whole system towards desired outcomes, but some places have a more powerful impact on the system than others (Meadows, 1999; Senge, 2006). These places are called "leverage points'.

Meadows (1998, p. 5) made a connection between these “places of power” (Senge, 2006) and indicators - “indicators are leverage points”. Indeed, influential indicators can and often do change the behaviour of a system, in addition to the role of monitoring progress. Thus, it is important to identify the right indicators, as leverage points can be the most effective shortcuts to improving a system without technologies, labour and rules (Meadows, 1998).

The change to make electricity meters easily visible in Dutch houses is a striking example of this point. This story was told in a system dynamics workshop in Kollekolle, Denmark in 1973. Meadows (1998, p. 5) recounts this story in her report *Indicators and Information Systems for Sustainable Development* – “when new Dutch houses were built with the electricity meter in the front hall where it is easily visible instead of out of sight in the cellar, electricity use in those houses went down by one-third though there was no change in the price of electricity”. The action of delivering the information about electricity usage to the users in an easily accessed way become an indicator that significantly changed behaviour in relation to saving energy.

Below is a list of 12 leverage points proposed by Meadows (1999), They are ordered by increasing leverage, but decreasing access – that is, the most easily accessed generally provide the least leverage. The leverage points are summarised and categorised into four groups: rarely influential, some leverage, high leverage and most influential (Table 1).

Table 1: Leverage points and examples in context of rural community indicators

Grouping	Leverage points	General descriptions and examples of indicators
Rarely influent	12. Constants, parameters, numbers (such as subsidies, taxes, standards)	This is lowest level of leverage impact. They are the most tangible and the easiest to measure, but rarely change the behaviour of a system. Example: number of poor households receiving a subsidy from a charity organization. This provides the households with more food for some days, but does not help to change their long term situation.
	11. The sizes of buffers and other stabilizing stocks, relative to their flows	This refers to the capacity or ability of buffers to stabilize systems. A large stabilizing stock may be better than a small one. However, buffers are usually physical entities, and cannot be increased quickly to generate change. Example: More land for cultivation may be a buffer for the community to ensure food sufficiency, but it is extremely hard to expand areas of land.
	10. The structure of material stocks and flows (such as transport networks, population age structures)	Structure of physical stocks may have crucial effects on the function of systems, but it may be very difficult for them to change because they are complex, and consume both time and money. Therefore they are rarely a powerful leverage point. Example: More elders living in a rural community, or a poorly planned electricity network
	9. The length of delays, relative to	Delays in system feedback loops, referring to both information received and the response, are critical determinants of systems behaviour. If information

	the rate of system change	is not received in a timely fashion and actions do not follow accordingly, that may cause oscillation (under or overshoot) in outputs. The length of the delay is important as a leverage point, but is not always easily changed. Example: Providing water for a paddy. Cereal crops need water in the growth stage. If water is provided after that time, the yield is low.
Some leverage	8. The strength of negative feedback loops, relative to the impacts they are trying to correct against	A balancing loop (negative loop) slows down or speeds up the process (in or out flow) and influences the stock towards the goal. Its strength is important as it can control the system. Example: Child care fees. Low fees may increase the number of children attending child care
	7. The gain around driving positive feedback loops	Reinforcing feedback loops speed up the process. They are self-reinforcing and drive system behaviour in one direction. "The more it works the more it gains power to work some more" (Meadows, 1999). This is a strong leverage point. Example: Soil erosion rate - "The more the soil erodes, the less vegetation it can support, the fewer roots and leaves to soften rain and runoff, the more the soil erodes" (presented in Meadows 1999).
High leverage	6. The structure of information flows (who does and does not have access to what kinds of information)	The speed and quality of information flows delivered to the system to make changes in behaviour. This is a high leverage point in the system. Example: "the visibility of the electricity meter" (presented in Meadows 1999).

		Information board located in the most visible place in a community.
	5. The rules of the system (such as incentives, punishments, constraints)	Rules of a system define what members of a community can do. Being outside these boundaries will attract a punishment. The rules become more powerful when they are in the hands of power. Therefore, to gain power for the whole community, rules should be formed by all members of the community Example: No buffaloes to be left in young forests. No school aged children to stay at home during school time.
	4. The power to add, change, evolve, or self-organise system structure	Systems can self-organize to change themselves by adding new loops and new rules into any parts of them. A community can survive without subsidy from outsiders. Example: The forests can survive and develop without interventions, which is why foresters believe in the ability of natural regeneration and natural restoration.
Most Influential	3. The goals of the system	Goal changes are a strong leverage points as they influence all the lower levels. Example: The goal of a community is to change to organic agriculture. It will bring a range of impact to the community affecting the area of land for traditional crops, information (training) on how to cultivate crops organically, and rules for using chemicals and so on. Strictly protecting the community forest affects the habit of using fuel wood for heating and

		cooking Punishment would be applied for any invasion.
	2. The mindset or paradigm out of which the system-its goals, structure, rules, delays, parameters – arises	Paradigm is a shared social idea, often an unstated assumption, and has very high leverage. A change of paradigm will change the behaviour of a system, but intervention at the level of paradigm is very difficult to achieve. Example: the custom of slash and burn or of wizards curing people, found in some rural communities, may take years to change.
	1.The power to transcend paradigms	Transcending paradigms, to be without seeing through the lens of paradigm, seems to be a mystery, but is the most powerful leverage point.

(Adapted from Meadows (1999))

Rural communities need indicators that can not only monitor progress, but can also help them to overcome their challenges, speed up their development progress and evolve towards sustainability. This study, therefore also employs the "power" of leverage points to identify influential indicators. The more powerful the indicators are, the more likely a community is to move towards sustainability.

To sum up, this study employs the principles of complexity, living systems and sustainable community development, informed by the *One Way Forward* model and a consideration of *leverage points*. This enables researchers to study rural communities as an emergent whole and should underpin development of an effective framework for identifying systemic indicators of progress for rural communities in developing countries.

1.3.2. Research Design

This research project uses an abductive process, in which the literature, conceptual framing and empirical fieldwork are in continuous 'conversation' with each other. It starts with engaging relevant literature to build a conceptual model, then conducts empirical fieldwork to test the model by means of case studies in Vietnam. Critical reflection on the outcome of the experiment generated insight into what had worked, what had not and why. The completed framework and a set of principles were proposed for the identification of rural community indicators. Finally, follow-up field work explored how the two case communities had applied their indicators and to what extent they had been able to keep their co-created shared vision and its core messages present in the life of the community. This research process, as well as the framework proposed by this study, are consistent with the principles of complexity and systems-based action research.

1.4 Thesis Structure

This dissertation is organised in five chapters. Chapters 2, 3 and 4 are submitted or published journal articles. Chapters 1 and 5 provide the introduction and conclusion.

Chapter 1 (this chapter) provides a background to the research and a review of the literature on the development of community indicators, in the context of rural developing countries. The research gap and research questions and objectives are identified. The research design and theoretical framework, inspired by the principles of complexity, living systems and sustainable development, are also discussed in this chapter.

Chapter 2 presents the conceptual framework for identifying systemic indicators of progress for rural communities in developing countries. The nature and evolution of community indicators are reviewed as a backdrop to the proposed model. The principles

of complexity, sustainable development and management, the *One Way Forward* model and the notion of *leverage points* are discussed within the context of community indicators and rural community development, and as the theoretical foundation for the framework. Details of the iterative process and its stages are the focus of this chapter.

Chapter 3 is about the empirical phase of this systems-based action research project. It reports on the application of the proposed model has in two communes in Vietnam. The chapter presents a detailed account of the process and steps in the cycle for identifying a shared vision, core values, systemic indicators of progress and compelling actions. In particular, the experiences and emergence during the process, and lessons learnt from those, are fully described and discussed. As well, the results of the workshops of both communities (shared visions, core messages and indicators) are attached in this chapter.

Chapter 4 reports on the reflective phase of the systems-based action research process. A follow-up to the initial field work was conducted with both communities, aiming to explore the unfolding impact in those communities of the first workshops. In this chapter, the community reflections on that impact and the findings from the follow-up workshops and in-depth interviews are discussed. And, importantly, improvements to the systemic indicators framework and a set of principles that could underpin its application in rural communities within developing countries are proposed in this chapter.

Chapter 5 summarises the research that is the focus of this dissertation, together with key findings, the response to research questions, and a note on theoretical and practical contributions. Research limitations are also acknowledged, for consideration in future studies.

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Chapter 2

SYSTEMIC INDICATORS FOR RURAL COMMUNITIES IN DEVELOPING ECONOMIES: BRINGING THE SHARED VISION INTO BEING

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ORIGINAL PAPER

Systemic Indicators for Rural Communities in Developing Economies: Bringing the Shared Vision into Being

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Abstract Community indicators have been a frequent focus of the scholarly literature. There has been little exploration, however, in relation to rural communities, especially in developing countries. This reflects the special challenges associated with the complexity of rural systems, and the difficulties involved in developing appropriate and systemic indicators for rural communities. Identifying indicators that help the community to monitor progress towards sustainable outcomes requires a framework that is both practical and holistic. This paper introduces a participatory systemic framework for identifying community indicators, which respects the principles of complexity and honours the sense of ownership present in the communities. This framework is an iterative, sharing, co-learning engagement process that extends from creating a shared vision and extracting its core messages, to identifying indicators of progress and determining what actions to try. Importantly, this framework enables us to rank the indicators identified by communities with reference to 'leverage points', the best places to intervene in the social-environmental system for transformational change. This framework provides a potential pathway for sustainable rural development and perhaps also for organisations and urban communities.

Keywords Community indicators · Complexity · Leverage points · Sustainability · Systemic indicators · Rural community development

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Introduction

Community indicators became a popular topic during the 1990s, highlighting the view that economic, social and environmental indicators in isolation cannot reflect community sustainability. This led the attention of scholars to the integration of isolated indicators to represent a more holistic picture of community wellbeing, reflecting progress towards community goals (Besleme and Mullin 1997; Cox et al. 2010; Phillips 2003). This movement also marked global encouragement of grassroots participation, through bottom-up approaches to the role of indicators and information in communities (Dluhy and Swartz 2006; Gahin and Paterson 2001).

Although the role of community indicators seems to be widely agreed upon as a tool for monitoring progress, stimulating community engagement and capacity building, and guiding decisions (eg., Gahin and Paterson 2001; Memon and Johnston 2008; Redefining Progress et al. 1997; Reed et al. 2006; Swain and Hollar 2003; Work Group for Community Health and Development 2015), there is still considerable debate about the best way to identify both the indicators and the sustainable standards they support.

The literature contains numerous studies on community indicators. The indicators linked to sustainable development have been so abundantly produced as to be referred to as an "industry" (King et al. 2000). Unfortunately, most of them focus on urban areas in developed countries (Europe, North America and Australia) (eg., Besleme and Mullin 1997; Daams and Veneri 2016; Dluhy and Swartz 2006; Innes and Booher 2000; Morton and Edwards 2013). There has been little work done on building indicators for sustainable rural community, especially in the Third World (Cobbinah et al. 2015; Phillips 2003), whose relative deprivation might lead one to expect more initiatives to develop rural communities (Chambers 1995) and where insight into sustainable development is still less than might be expected (Cobbinah et al. 2015).

The complexity of the challenges in rural areas in developing countries – reflected in multi-dimensional interrelationships and unpredictable, emergent change (Bell and Morse 2005; Nguyen and Bosch 2013; Wells and McLean 2013) – contributes to the difficulty in identifying and using community indicators, as well as achieving sustainable development (Phillips 2003; Thomas and Amadei 2010). This complex environment is characterised by isolation, vulnerability, poor basic services (housing, communication, education and health facilities), and mono-productive means (mainly farming) which lessen the opportunities for rural people to connect with the outside world (Adisa 2012). Linear and mechanistic approaches to the pursuit of sustainable outcomes in this complex, rural environment have been problematic. This environment requires a more holistic approach, considering the whole 'living' system in order to identify indicators that reflect wellbeing and healthy community, rather than focusing on individual, unconnected parts (Innes and Booher 2000; Morton and Edwards 2013; OECD 2011). It is still a challenge, however, for rural development scholars and practitioners who seek to apply what we understand about complexity and complex, living systems, and to find effective ways by which communities can identify indicators of progress towards sustainable outcomes.

This is a conceptual paper, which proposes a systemic framework for identifying rural community indicators, underpinned by the principles that govern the behaviour of complex, living systems. This framework seeks to build on the One Way Forward model, which explores the dynamics of transformational change in organisations (Wells and McLean 2013). It shifts the setting from industrialised organisation, to developing rural community,

and looks to gauge the power of systemic indicators by reference to their standing as "leverage points", as described by Meadows (1999). This framework is designed to overcome the drawbacks of traditional approaches, by facilitating community engagement, a culture of ownership, a whole-of-system perspective and accountability through an iterative process of adaptive learning and sharing.

Community Indicators Movement

Indicators and information have been long used by policy and decision makers (Phillips 2003), but their use in communities only started to be of interest to scholars from 1910, when the Russell Sage Foundation took the initiative to investigate community indicators by conducting local surveys to assess social conditions through measuring factors in education, public health, recreation, crime and other social dimensions (Cobb and Rixford 1998; Phillips 2003). This initiated the movement from an economic focus to social trends and then community indicators in the late 1980's to early 1990s, with the shift of attention to the integration of individual perspectives in order to reflect community wellbeing (Sawicki and Flynn 1996). Indicators and information in communities became valued in the efforts to achieve sustainable outcomes (Gahin and Paterson 2001; Gahin et al. 2003).

Community indicators have been universally acknowledged as a tool for defining, measuring, managing and preserving community wellbeing (Progress Redefining and Network Earth Day 2002). They can focus on all levels of interest, such as nations, regions and even small villages. Whatever the geographic location, community indicators reflect a community goal, shared vision and priorities (Cox et al. 2010) and provide information that all members of a community care about, reflecting the values of the community (Meadows 1998). Beyond the aforementioned benefits, indicators can also affect the behaviour of a system (Meadows 1998). Influential indicators can, themselves, change communities.

Community indicators are defined as "bits of information that, when combined, generate a picture of what is happening in a local system" Phillips (2003). Implicit in this definition is that the indicators could be "small", but have to be able to "reflect the status of larger systems" (Norris 2006; Progress Redefining and Network Earth Day 2002) and to show changes and trends of systems over time (Meadows 1998; Norris 2006). The combination of individual indicators can provide insight into the whole community, rather than just reveal the status of individual elements. They are designed and developed by community members themselves, and used with their consent. That ensures the comprehensiveness of the indicators and reflects all facets of community wellbeing, or community 'sustainability'.

Quality of life, sustainability and healthy community have been the three main concerns that drive pathways for community indicators that reflect community wellbeing (Phillips 2003; Progress Redefining and Network Earth Day 2002; Redefining Progress et al. 1997). The aim has been to develop "ideal" community indicators. The Bellagio Principles, regarded as best practice, are included in the Community Indicator Handbook, published by Redefining Progress et al. (1997) and have had wide influence on scholars to date. The United Nations Millennium Development Goals and Indicators, OECD Wellbeing indicators, European Union's Social Indicator Framework, Canada Wellbeing Measurement Act, the UK Sustainability Indicators and the Happy Planet Index are sets of indicators at regional and national level focusing on wellbeing in an integrated framework. They operate as yardsticks for macro efforts, but may not adequately reflect the important considerations at the local community

level (Reed et al. 2006; Riley 2001). The community needs to be fully engaged in order to ensure that it "owns" its indicators.

Previous models for developing indicators have involved a multi- step process. The 10 steps process (Redefining Progress et al. 1997) summarises community indicators projects in the 1990s. Refinements followed, such as 9 steps (Redefining Progress and Earth Day Network 2002) and 12 steps (Reed et al. 2006). Although the number of steps differs, the thinking is quite similar – determining goals, developing/selecting indicators, collecting data and reporting. Interestingly, these frameworks emphasise the need to establish clear purposes for indicator processes/projects and the identification of potential indicators by a working group (including individuals and organisational representatives and experts) in the beginning. Although communities subsequently have the opportunity to generate their vision and priorities, before selecting their indicators, the pre-work by 'experts' may well influence the thinking of community members and even constrain their openness when sharing their thoughts and making decisions together.

Furthermore, indicator frameworks (also named indicator areas, domains or categories) have varied from project to project. Many scholars have developed indicators by exploring and attempting to integrate the "triple-bottom line" – economic, environmental and social – such as Tasmania Together and Growing Victoria Together (Adams and Wiseman 2003), and the United States (Meadows 1998). The Balaton Group built a set of indicators for sustainable development, based on the work of Herman Daly and tracking the relationship between means (the different types of capital, including natural, built, human and social) and ends, including the 'ultimate end' of well-being (Meadows 1998, p. 73). Recently, community indicators have focused on a sense of harmony, reflecting community wellbeing. For example, Community Indicator Victoria (Cox et al. 2010) established a set of 5 goals – Healthy, safe and inclusive communities; Dynamic, resilient economies; Sustainable built and natural environment; Culturally rich and vibrant communities; and Democratic and engaged communities. The diversity in proposed indicators reflects either the difference over time in the perspectives of scholars in developing the frameworks, or the concerns and priorities of communities where the frameworks are applied.

Indicators have been widely proposed as both quantitative and qualitative (eg., Boarini 2011; Meadows 1998; Noll 2002; OECD 2015; Phillips 2003). Some see them explicitly as "quantitative information" to measure community wellbeing (Besleme et al. 1999). A broader perspective argues that numbers alone are not able to reflect the multifaceted and holistic wellbeing of community, including intangible subjective elements. In that context, indicators are not necessarily measurable. They may be based on subjective experience, but they will be observable or accessible to the senses (Progress Redefining and Network Earth Day 2002; Wells and McLean 2013), reflecting all community values.

"Participation" has become a methodological principle for community indicators, as they require multi-discipline and multi-stakeholder involvement in the whole process (Leeuwis 2000; Mathbor 2008) to mirror the perspective of all members of a community on sustainable development. Participation promotes wellbeing, as it helps to build social relationships and networks. Implicitly, community wellbeing reflects collective feelings and actions rather than an individual's (Haworth and Hart 2007; Sirgy et al. 2013). In addition, wellbeing embraces the value of democracy, which is one of the obvious features of participation (White and Pettit 2004). Therefore, participatory efforts enhance wellbeing and this can happen if indicators are perceived, designed, developed and used within a specific community and by its members (Rapley 2003; White and Pettit 2004). However, so far projects seem to "focus on awareness instead of direct widespread participation" (Sirgy et al. 2013).

There has been increasing recognition of the applicability of complexity principles in response to the shortcomings of approaches based on reductionism and linear thinking, top-down approaches (eg., Bosch et al. 2014; Reed et al. 2006; Wells and McLean 2013), a preponderance of numerical indicators (eg., Bagheri and Hjorth 2007; OECD 2015; Wells and McLean 2013) and exclusive dependence on modelling technologies (eg., Hjorth and Madani 2014). This approach suggests a need for systems based integrative research on community indicators that can truly reflect the movement of community wellbeing towards sustainability. Van Kerkhoff (2014) argues that "we tend to retain simple, linear research processes for engaging with complex, non-linear subjects". He argues that researchers should place themselves as a part of the system and function within it to ensure that they gain insight into the whole system and respond in a timely fashion to the emergent outcomes. This holistic approach demands a real commitment and accountability from all members of a community in the whole process of developing their indicators.

Theoretical Foundations

Community as a Complex System

It has become increasingly apparent that mechanistic and linear approaches to understanding and problem solving encounter severe limitations when it comes to dealing with the complexity that characterises our world. To make sense of complex systems – climates, economies, ecologies, organisations, societies, communities – it is necessary to engage with them as a whole. It means recognising that a problem does not exist in isolation, but is embedded in a complex system with all the interrelationships and interdependencies amongst multiple elements within the system, which are also affected by a range of unpredictable changes in the environment (eg., Flood 2010; Meadows 2008; Mitleton-Kelly 2003; Senge 2006). Indicators, therefore, cannot represent just one perspective, one discipline, and actions should not be made by reference to and for just one problem. They must incorporate and integrate a range of disciplines if they are to capture the whole system for sustainability with "surprises" – unexpected emergence.

Seen through the lens of complexity, a community functions as a system in itself and interacts in the same way with other related systems – the community may be our 'system of interest', but it is not a closed system, with impermeable boundaries (Katz and Kahn 1978). In addition, we cannot be certain what future community will emerge (Meadows 2002; Wells and McLean 2013), and therefore exactly what community indicators are the best for monitoring (and influencing) community changes. Nevertheless, insight can be gained from experimentation and feedback, by honouring the nature of complexity and the self-organisation of living systems.

Sustainable Development and Management

The notion of sustainable development was notably defined in the 1987 Brundtland Report to promote the environmental protection and sustainable use of natural resources – "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (World Commision on Environment and Development- WCED 1987). It was a response to the global acknowledgement that the

population has been growing fast, but the planet has not been developing the means to meet the material and energy needs necessary for the sustainable functioning of the population, and has been putting at risk its ecological well-springs in its efforts to meet those needs (Bridger and Luloff 1999; Duran et al. 2015; Meadows 1998; Roseland 2000). Over three decades, this concept has now become a globally accepted principle (Drexhage and Murphy 2010; Ishwaran et al. 2008), underpinning a paradigm shift in development practices.

Sustainability-related issues and challenges are highly complex (Nguyen and Bosch 2013; Zaccai 2012). They require the integration and incorporation of disciplines (e.g., economic, ecological, social and human) and engagement of related actors (e.g., government, NGOs, local people, researchers and practitioners) (Cobbinah et al. 2015; Duran et al. 2015; van Kerkhoff 2014) to gain distributional equity of well-being across time (inter-generational), and space (e.g. rural/urban locations) (Solow 1995; UNECE 2013). In other words, the challenges we are facing cannot be completely solved in isolation, as they are interconnected and interdependent within a system (Bosch et al. 2014; Whiteman et al. 2013), and often emerge unpredictably (Meadows 2002; Meadows et al. 2004). This prompts a need for research approaches that are more cognisant of complexity and integrative, so as to honour the wholeness. We should not underestimate the challenge involved – Cobbinah et al. (2015) noted that many failures are evident in incorporating disciplines and sectors to pursue "ideal synergies" in developing nations.

Sustainability has been one of the greatest concerns in providing a framework for community wellbeing (Besleme et al. 1999) and has increasingly been the focus of scholarly discourse (eg., Cobbinah et al. 2015; Gahin et al. 2003; Reed et al. 2006). It is the ultimate goal of communities, representing feelings and the appreciation of life satisfaction, freedom, happiness, power and self-respect (Meadows 1998) (called subjective wellbeing by several experts – eg,. Boarini 2011; Liao 2009; Terzi et al. 2015), which are built up from the harmonious combination of the 'capital' resources necessary for life (natural, built, human and social capitals) (Duran et al. 2015; Meadows 1998). A community can function in the sense of sustainable development if its members together can maintain its system stability by developing a balance of the various capitals and adapting to unexpected emergencies, in order to maintain their happiness and harmony with nature, promoting self-development and self-esteem. The vision of the community should therefore be articulated in ways that reflect integration and synergy (Duran et al. 2015) and community indicators of progress should be identified accordingly.

"One way Forward" Model and Sustainable Rural Community Development

Wells and McLean (2013) introduce a model, "*One Way Forward*", as a possibility for facilitating "transformational change for sustainability" in organisations. The research that informs the present article takes as its starting point the question of whether, or to what extent, the model might be usefully applied in rural communities in a developing economy – a very different environment from the organisational settings, in an industrialised economy, in which *One Way Forward* was conceived.

One Way Forward is underpinned by the principles of complexity, including pervasive and 'irreducible" uncertainty (Meadows 2002). Despite the uncertainty, decisions have to be made and tried out in action, and by learning from trial and error, orientated by a shared vision of "what we really want, not what we'll settle for", an understanding of how to move towards sustainability can be gained. Through the lens of complexity, this framework enables

organisations to understand and influence systemic change towards sustainability, through strategic experiment. Experiments are prompted by the 'core messages' that can be extracted from shared vision and reflected in indicators of progress.

Rural communities often witness the poverty, vulnerability, isolation and powerlessness that prevent rural people from reaching a state of well-being (Chambers 1983; Chambers 2012; Ha et al. 2014; Ha et al. 2016). Those experiences probably make rural people less confident in thinking about and sharing what they truly want, personally and for their families in community, or how they want to *experience* future community life (as opposed to what it might look like). *One Way Forward* enables the flexible use of participatory approaches in the process of caring broadly for a whole organisation, rather than for isolated individuals, in order to articulate a shared vision and collective indicators, as a framework within which joint decisions can be made and actions taken. It facilitates organisational members coming together to share what they think and feel about their desired collective future and to articulate organically a co-created shared vision that can inform the decisions they make (Wells and McLean 2013).

Leverage Points and Systemic Community Indicators

Those involved with systems thinking believe that, amongst a system's many constituent elements, it is possible to identify the most powerful places to intervene, in order to change the whole system towards the desired outcomes. These places are called "leverage points', which Senge (2006) describes as the "right places in a system where small, well-focused actions can sometimes produce significant, enduring improvements". Meadows (1999) describes leverage points as the "places in the systems where a small change could lead to a large shift in behaviour", and as "points of power".

Indicators are not only tools for monitoring progress, but they can and often do, change the behaviour of a system. In fact, Meadows goes further - "indicators are leverage points" (Meadows 1998). Meadows argues that the presence and use of the right indicators can significantly improve the operation of a system. (Conversely, she cautions against selecting indicators without due thought – poorly conceived indicators can lead to unintended and perverse outcomes.). She also suggests that leverage points can be the most effective shortcuts to improving a system (Meadows 1998).

Leverage points exist in every system (eg., the living body, the economy, the ecosystem, an organisation and a community). A bank's interest rate is an typical example that is often mentioned by the system's community as an influential leverage point in an economic system (Meadow 2008; Nguyen and Bosch 2013) and can produce "large effects on the whole socio-economic system" (Nguyen and Bosch 2013, p. 110). The change to make electric meters easily visible in Dutch houses is another striking example of this point.

> *When new Dutch houses were built with the electricity meter in the front hall where it is easily visible instead of out of sight in the cellar, electricity use in those houses went down by one-third though there was no change in the price of electricity*". (Meadows, 1998, p.5)

The action of delivering the information about electricity usage to the users in an easily accessed way become an indicator that significantly changed behaviour in relation to saving energy.

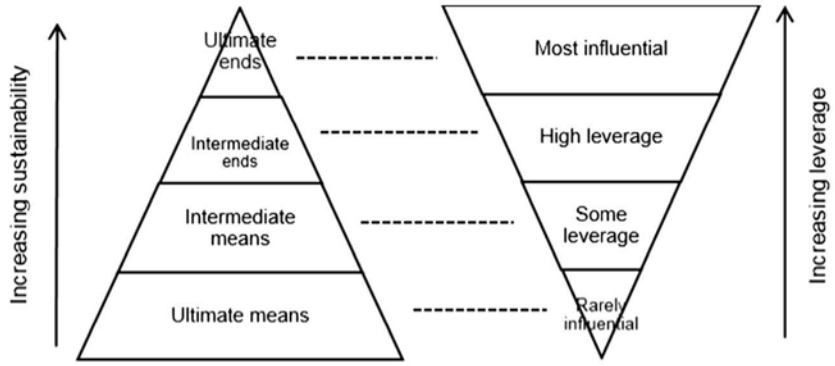
The goal of a community change would be a strong leverage point as it influences all the sub-systems within the community system. For example, a community may want to convert its

conventional farming to organic agriculture. That will probably bring to bear a range of impacts on the community affecting the area of land for traditional crops, information (training) on how to cultivate crops (and which crops) organically, and rules for using chemicals and so on. Or strictly protecting the community forest affects the habit of using fuel wood for heating and cooking.

Meadows (1999) proposes a list of 12 'places to intervene in a system' ordered by increasing degree of influence or leverage – she notes, importantly, that the most influential are the hardest to utilise. In Fig. 1, they are categorised into four groups: rarely influential, some leverage, high leverage and most influential. It could be argued that these four groups of leverage points echo the four levels of the Daly Triangle of means and ends endorsed by Meadows (1998), also represented in Fig. 1. The more powerful the indicators are, the greater the leverage that can move a community towards sustainability.

Physical and tangible elements (numbers, buffers, structure and delay), reflected in quantitative indicators, are sometimes important, but interventions here are rarely powerful enough to make the whole system change. They correspond to Daly's "ultimate means" that are the natural capital needed to support community life and its activities, and are converted to intermediate means (Daly 1973). Intervening at this level carries the lowest possibility of changing behaviour towards community wellbeing..

There are some leverage points (including the use of positive and negative feedback loops) that reflect "intermediate means", encompassing built capital and human capital. They are invented by humans and reflect the productive capacity of humans, hence they are necessary, but are simply inputs and not adequate to fulfil the ultimate goal of the community. For example, revegetating an area of land subject to soil erosion, may counter the reinforcing feedback loop that flows from soil erosion, to the increasing difficulty for natural revegetation,



Notes:

Ultimate means: Natural capital (eg., solar energy, land, biodiversity and water);

Intermediate means: Built capital and Human capital (eg., labour, tools, processes, materials, transport, communication means and workshops);

Intermediate ends: Human capital and Social capital (eg., health, wealth, knowledge, leisure and communication); and

Ultimate ends: Wellbeing (eg., happiness, identity, harmony, self-respect and self-organization)

Rarely influential: Numbers, Buffers, Structures and Delays;

Some leverage: Strength of Balancing and Reinforcing feedback loops;

High leverage: Information flows, Rules, and Self-organisation; and

Most influential: Goals, Paradigm and Transcending Paradigm

Fig. 1 Sustainable development and leverage points (adapted from Meadows (1998) and Meadows (1999))

to increased soil erosion and so on. Dampening the feedback loop is acting at a leverage point, but the revegetation is not an end in itself – it is an "intermediate means" by which the ultimate end of community wellbeing is facilitated.

The interventions with more powerful leverage reflect the "intermediate ends" that are human and social capital. They are goals of communities, but also represent the tangible instruments and capacity to achieve the intangible and most profound goals, which are related to satisfaction, feeling and appreciation – the "ultimate ends" of communities. At this level, community indicators tend to be more qualitative and reflect the transformational shift of communities.

The most influential community indicators, whilst they are powerful, are very challenging to identify (Meadows 1999; Summers et al. 2015), especially in the isolated rural regions of developing countries, where people have limited education and even less opportunity to become well acquainted with systems concepts. Nevertheless, humans appear to possess an inherent "intelligence" that enables them to sense, and adapt to complex environments (Hamalainen and Saarinen 2008; Saarinen and Hämäläinen 2007; Wells and McLean 2013). Hence, at some level, they have the capacity to function in a complex systemic environment, and community processes should be able to draw on that capacity.

In addition, it might assist these communities if they could benefit from the understanding of 'outsiders' in relation to leverage points and the identification of the most influential of the community's indicators of progress towards transformational change and sustainability. In this sense, rural development and systemic experts and practitioners have a valuable role to play in building the capacity of communities to undertake strategic experiments and to refine indicators in support of bringing the shared vision of community into being.

Process of Identifying Systemic Indicators of Progress towards Bringing the Shared Vision of Rural Communities into Being

The framework proposed in this paper is inspired by the principles that emerge from our understanding of complexity and complex systems and sustainable development. It is informed, in part, by *One Way Forward*, but does not stop at a list of indicators of progress based on core messages, supporting strategic experiments. Beyond that, the process formulated here identifies the most influential indicators by reference to our understanding of leverage points. Identifying influential and powerful indicators may prompt highly leveraged actions and speed up progress towards reaching the community's goals. In addition, this work flags the need to go beyond the conceptual foundation, and to develop a framework that honours the practical experience of rural communities. That experience confirms the critical need for greater awareness, passion, humility and enthusiasm from both community members and outside practitioners who want to assist members to shape their community in ways that deliver the collective experience that is their heart-felt desire.

The proposed process is an iterative cycle of vision, action and reflection amongst community members. The process should be ongoing to reflect the way the world functions, as it is continuously evolving and the decisions made today may not be appropriate in the future (Farley and Costanza 2002). Moreover, we cannot predict exactly what shape the future community will take, and therefore exactly what community indicators will be appropriate. The iterative process enhances the community's ability to adapt to challenges and changes, as community members listen to and learn from the system feedback (the consequence of

decisions made and experiments chosen)– "dancing with the system" (Meadows 2002) – and refine or replace indicators and decisions. In this way, the community becomes an adaptive learning system (Innes and Booher 2000).

Consistent with the principles of complexity – systems are united entities, in which the health of the parts and of the whole are interdependent (Meadows 2002; Wells and McLean 2013; Senge 2006) – this process considers the whole system, rather than just focusing on a particular problem the community may be facing, as conventional approaches tend to do (eg., Guijt and Woodhill (2002)). Rather than setting a goal for an isolated part or intervening to solve a particular problem or improve a situation, this process starts by co-envisioning and articulating the fullest goal of the whole community.

In addition, the goal of a community is not set up by its leaders only, without the awareness and agreement of the community members. The iterative cycle encourages interaction and cooperation amongst the people, regardless of position or level of wealth in the community, supporting an equal "voice" for everyone in the shared vision, agreed indicators and joint actions. Full participation of all the members allows for greater mutual understanding, transparency and accountability (Maani 2002; Maani 2013) as well as nurturing motivation and a sense of ownership for the process and its products (Ha et al. 2014; Stain and Imel 2002), commitment to actions (Nguyen and Bosch 2013; Wells and McLean 2013); and knowdge development (Barton et al. 2004; Ha 2016). This helps to ensure their continued involvement and responsibility for emergent outcomes in the whole development process, leading to sustainability.

The proposed framework respects the values uniting all community members. Open and respectful discussions are vital to involvement. The more stakeholders engage in the process the more capable the people become and the greater the sense of community wellbeing. Even where participant numbers require more than one workshop, the co-creation process will benefit from the greatest practicable number of participants. Both community leaders and "outsider" facilitators are responsible for inviting and encouraging local people to participate in the process. The low levels of self-reliance and self-development may lead to the process in rural communities taking more time than in urban communities, hence it will be necessary for facilitators to be committed and patient. If the people enjoy participating in the whole process, they will own their "real" vision and then they will have genuine commitment to indicators and actions for change (Ziegler 1991).

This process emphasises sustainable community development through active learning and experimenting with community indicators. Thus, it does not rush to produce a list of indicators, but values the community. It is especially important for rural communities where people may not be fully aware of the importance of building their own indicators or not be familiar with the use of indicators (even indicators for conventional interventions that are largely decided and shaped by outsiders). The process is a means of assisting community members to engage with and explore new perspectives and possibilities, so that, naturally, they can develop, own and use their indicators as a "window" onto complexity (Norris 2006), fostering self-reliance and self-development.

Agricultural production characterizes rural settings. Farming is not only the major livelihood for rural people, but also the foundation of their culture. Shared vision, core values, indicators and actions, resulting from the process described here, should express the community's aspirations to establish sustainable agriculture as one of the most important features. Therefore, we might expect to find agriculture present, either directly or indirectly, in the vision. This does not refer to a bias or frame in thinking, but reflects systemic and

contextual boundaries, as 'boundary' is a core systems concept (van Kerkhoff 2014; Williams 2010).

The process described here of identifying rural community indicators works through five questions, corresponding with components in an iterative cycle (Fig. 2): How do we really want to experience life and living together in our community? What are the core messages in our shared vision? What are the indicators of progress towards bringing our shared vision into being? Which indicators are powerful leverage points that can influence our community to achieve positive transformational change? How will we keep our shared vision present and lively as we make decisions about our shared future? This is a dynamic and evolving process, hence these questions are raised and answered based on feedback (outcomes of actions and reflection) in every cycle.

The following is a high-level description of the five stages in the iterative cycle. A full account of the whole process in action, based on fieldwork designed to test the conceptual framework and to explore its practical application in two rural Vietnamese communities, will be presented in a forthcoming paper.

Step 1: Creating a shared vision

Visions express what are expected in the future. They are "often seen in the light of the ideal" (van der Helm 2009) and formed from "concerns… with the desirable, the imagined, the intended, the compelling, indeed, the mythic" (Ziegler 1991), The agreed vision, which is co-created in a truly participative envisioning process, contains collective expression of each community member's story about the community they aspire to. Rather than operating at the level of 'cerebral' analysis only, this envisioning process tends to reflect what Ziegler (1991) describes as being "embedded more deeply within psyche, spirit and mental culture", so that the envisioners articulate a "values-rich story" of the community future (Senge 2006; Wells and McLean 2013). This should help to foster a feeling of equal worth amongst the community members, leading to an increase in self-respect and in the confidence required to think about and pursue a better future – arguably two drivers for sustainable rural community development.

In addition, because a shared vision of this kind emerges from the level of basic values or deeply held desires, we find that what participants really want unites them far more than it

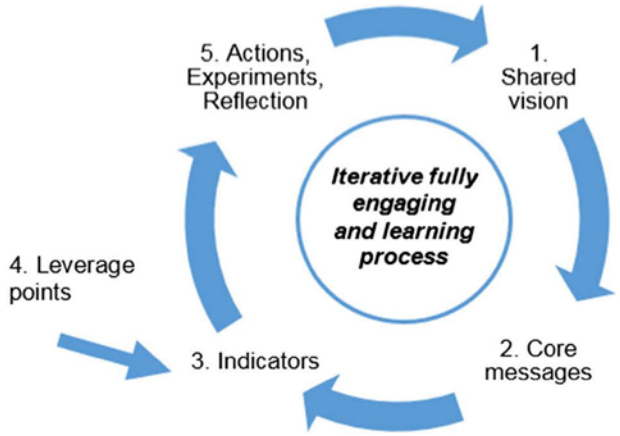


Fig. 2 A possibility for systemic community indicators for rural communities (Adapted from Wells and McLean (2013))

divides them. Differences in perspective, philosophy, political orientation or personality do not easily intrude on this process. Of course, this does not mean that there will be no future disagreements as decisions and choices are made about shaping the community's future, but those disagreements will take place against a backdrop of shared vision at a deeply personal level. Such disagreement is more likely to be productive than disruptive or destructive.

Visual aids such as pictures of every facet of life (sports, religions, schools, nature, urban and rural landscapes, children and family activities, etc.) support the process of envisioning. They help envisioners to connect their hearts and minds, and act as 'props' to help tell the stories of how they really want to experience the future together. These individual stories, shared in small groups initially, are gradually conflated and gathered up in shared visions, first in the small groups and, eventually, as one story for the whole workshop. The shared vision, reflecting human needs, should be mainly shaped by heart, rather than by eyes – facilitators focus attention on ensuring that the vision expresses desired *experience*, rather than what the community should look like. Qualities such as joy, understanding, harmony with nature, creativity and beauty may have an important part to play (Farley and Costanza 2002; Max-Neef 1992). It is crucial for community members to be aware that the shared vision belongs to them and that all the members are responsible for bringing their vision into being.

Step 2: Extracting core values (core messages) embedded in shared vision

As noted above, a shared vision is likely to be a "values-rich story", containing values that readily emerge when analysed by the community. The question is: '*What are the core messages/main points/values in our shared vision*?'. Community members can write their answers on small cards and then stick them on a wall of the hall (or speak them out while the facilitators write them on big sheets of paper, visible to all participants). Individual cards are grouped around common themes – 'core messages' – and named by the participants. Community members co-create the vision, so they are well placed to tease from it the material that will help to develop indicators. Core messages sit at the heart of the shared vision, and of the experience of living and working together to which the community aspires.

Step 3: Identifying indicators based on the core messages

Community indicators are identified, used and refined by the community and for the community. The indicators can be identified based on both agreed core messages and by reference to what facilitators and community members understand as "leverage points" (Meadows 1999).

Identifying community indicators starts with questions: '*What are the indicators that we are making progress towards bringing our shared vision into being?', 'What will we observe?' 'What are the little things that mean a lot?'*. The nature of indicators, should be carefully explained again, with examples of indicators that people may be familiar with and have used, but may not recognise or describe them as indicators. Discussions are facilitated to identify possible indicators, based on each core messages in turn.

Community indicators are not able to tell the community how to work or to make right decisions, but they can provide timely and accurate information that helps to capture a system's dynamic behaviour (Meadows 1998; Innes and Booher 2000; Phillips 2003) and to "secure its health and vitality" (Progress Redefining and Network Earth Day 2002). Rural community indicators provide a community with such information in terms of their farming, livelihoods,

neighbourhood relationships, feelings and happiness, and whether or not these things are moving in the direction of bringing their shared vision into being.

Both qualitative and quantitative indicators may be necessary for communities to monitor their progress. Wells and McLean (2013) argue that because of the assumptions entrenched in slogans like "you cannot manage what you cannot measure", players (often outsiders or leaders of communities) use measures to indicate what has been done in communities, after the event. In other words, "measure lags outcomes" because only what has already happened – tangible outcomes – can be captured by measures. Such measures tend, also, to capture the behaviour of parts of a system, separate from the whole. In contrast, systemic indicators "monitor what is unfolding – they lead outcomes", and can provide information about "how much progress we are making – whether we are on track" (Wells and McLean, 2013, p.77). They try to capture the behaviour of the whole system, without being the whole system – often they are 'small things that mean a lot".

The players aspire to understand the unfolding changes in communities and how successfully they are bringing their vision into being. But indicators are not separate from the community system they are monitoring – they are connected and can influence the behaviour of the system, often in unintended ways (Meadows, 1998). It is therefore important that community members choose wisely the indicators used to monitor progress in bringing their co-created vision into being.

Core messages extracted from the shared vision are described as a "springboard" (Wells and McLean 2013), and are the principle source for identifying a community's indicators of progress. This ensures that communities will develop a set of indicators that reflect what they care most about. One core message can be the foundation for several indicators and these indicators can be seen as sub-messages reflecting the core messages. Indicators can reflect more than one core message. Some core messages may themselves be good indicators.

Step 4: Categorising indicators by levels of leverage

Beyond monitoring the progress that follows actions, powerful indicators themselves can influence a system and catalyse changes (Phillips 2003; Progress Redefining and Network Earth Day 2002; Reed et al. 2006). This means that the 'right' community indicator can have a direct impact on the awareness of community members, enhance their aspirations, and finally prompt change in their habits and behaviours. Meadows (1998) points out that "indicators are leverage points" as "they can change the behaviour of systems for better or worse".

As reference to leverage points requires conceptual understanding of dynamic systems, it is challenging for rural communities to identify indicators based on their standing as leverage points. After the community has established a set of indicators based on core messages, they will require support from 'outsiders' – typically those who facilitate the envisioning process – in assessing which indicators exert the most leverage on the community system. That assessment will need to be explained very carefully and patiently so as to ensure that the community understands and embraces the outcomes. That is crucial, as the community indicators (at all levels of influence) are owned and used by the community. It is important that the "experts" participate in the whole process (ideally as facilitators) to grasp the context, how the process unfolds and the community aspirations.

The matrix below (Table 1) draws on the work of Meadows (1999), who ranked the power of leverage points by reference to their place in the structure of a system. It uses Meadows' leverage ranking to express how to use leverage capacity to categorise rural community

indicators. In the context of rural community, it would be ambitious to apply all twelve places to intervene in a system identified by Meadows (1999), given their conceptual demands, so the matrix uses those that are likely to be most conceptually accessible to community members, who may have only a basic knowledge of systems concepts.

The levers, core messages and indicators presented in Table 1 are just examples and they are given based on the context of developing countries. They may all be different in different communities. Indicators for each core message may be reflected in only one or two of the categories of levers.

Rural community indicators may reflect the more experiential (indigenous) knowledge of farmers, as most of the community members work on farms and in other related activities. The indicators may, for example, reflect a community's interests in sustainable agricultural production that can contribute to long term community thriving. In this context, indicators may be more quantitative. Other intangible facets of community, such as close knit relationships in families and neighbourhood, happiness, leisure and respect will more likely appear in qualitative and subjective indicators.

Step 5: Taking action to keep the vision lively in community life

The process of identifying community indicators and the identified indicators themselves can be seen as indirect 'actions' that may influence changes in a community's awareness and behaviour. Nevertheless, they should not be confused with the actions that flow from community decision making processes. "Indicators are not substitutes for action" (Progress Redefining and Network Earth Day 2002), but they may be a "prompt to action" (Wells and McLean 2013), keeping the shared vision, core messages and indicators lively in the community, and preventing them from becoming empty artefacts.

Systemic actions are best seen as experiments in a cycle of action learning. Viewed through the lens of complexity, it is not possible for communities to guarantee or dictate that the desired outcomes will follow chosen actions (Senge 2006; Wells and McLean 2013). Indicators monitor whether or not the chosen actions – the experiments – are taking the community in the right direction. This process is itself an experiment and every indicator as well as every action is experimental. Yet, the experiments are not random. They are underpinned by the principles that govern the behaviour of complex living systems and chosen on the basis of shared vision, core messages and indicators that are informed by the community's "humanity,

Table 1 Matrix of community indicators

Levers Core messages (examples)	Numbers	Information flows	Rules	Goals	Paradigm
Cooperation	Number of groups pursuing organic methods	Transparency of performance information flowing between groups	Collaboration between groups in following the procedure and process of organic production	Commune certified organic by a reputable body	Principles underpinning organic method applied in the way group members interact.
Respect					
…					

rationality, ability, intuition, compassion and morality" – the qualities required if we are to 'dance with systems' (Meadows 2002). Experimenting involves action and learning, and lessons learnt from error in each experiment (or cycle) will be valuable inputs for the next one (Senge 2006; Wells and McLean 2013) through reflection - a key part of learning (Houston 2008; Massingham 2014). Through the process of learning and responding to feedback, the community vision can be "brought lovingly into being" (Meadows 2002).

The process of identifying systemic rural community indicators is an ongoing cycle, underpinned by the learning and engagement of all members of communities. Community members can learn from each other and from both their successes and failures - systems feedback. The continuity of this process fosters community resilience and self-organisation – action promoting adaptation. Rural communities can "feel" and have "fun" with this process, but may need a little encouragement from outside.

Who should be Involved in the Process of Identifying Systemic Indicators for Rural Communities?

Identification of systemic indicators for rural communities should involve as many community members as possible, as all outcomes of the process (shared vision, core messages, indicators and actions) belong to all of them. Moreover, identifying community indicators is a capacity building and cooperative process, which not only produces what can be recorded and written down, but also what is intangible and very important for community development, such as awareness, knowledge, strong relationships, trust, confidence and self-esteem. These qualities can help a community to learn effectively from feedback on outcomes of community decisions and action, so that they can respond in a way that moves them progressively towards what the community is seeking.

This process for rural communities should also involve rural developers, as rural communities will probably need facilitation (especially during the first cycle). Rural communities are often subject to development interventions that aim to improve agriculture and rural lives. The closest 'outsiders' are in agro-forestry extension stations and agricultural and forestry departments – these people may well be comfortable as facilitators. In addition, the iterative action learning process may provide the chance to improve cooperative relationships between the community and outsiders, and enhance the capacity to reduce the community's isolation from the outside world.

While Innes and Booher (2000) argue that indicators need to be agreed by both experts and insiders as "without experts, the indicators are not credible and not used" (p. 178), it should be noted that community members have their own experiential knowledge, and in regard to feeling and aspirations, they are well placed to decide what is consistent with their interests, nature and culture – in this sense, they are 'experts' in what should work and be best for them. They will use whatever they believe in. Community indicators are used by communities, so they should be produced by the users. What the communities need from external experts is their advice and support, not to dictate action, but to strengthen the process that underpins community decision making and action. Shared vision creates the context for the application of expert assistance. Outsiders can also act as a bridge to transmit the community's concerns to rural policy makers. A community as a system can, over time, come to function at its best, if it is connected to more of itself (Wheatley 2006) and if responsibility is located in the system (Meadows 2008).

Conclusion

Rural community indicators play an important role for sustainability and rural development. They are "small things", but "mean a lot", as they are an instrument for suggesting strategic development experiments, monitoring the progress of those experimental actions, and influencing the orientation of community players towards transformational change. Community indicators are vital, but the *process* of identifying them may be of even greater significance for rural community development.

This paper has explored an elaboration of the One Way Forward model to create one possibility for systemic indicator identification that encourages all members of a rural community to engage in an iterative learning and sharing process in order to improve the crucial factors for sustainable community development. By collaborating closely, all members of a community can improve their awareness, knowledge, relationships, trust and self-esteem, while articulating shared vision and agreed core messages, identifying compelling indicators and making sound experimental decisions. Without sharing of experiential knowledge and co-learning in response to feedback, the opportunities for developing ownership, self-development, local leadership, local cooperation, motivation and continued involvement will be limited, and communities may remain passive recipients (not true beneficiaries), increasing the likelihood of failed initiatives and unsustainability.

A community functions as a system that encompasses many elements interacting in complex interdependent relationships. We can identify particularly powerful places in which to intervene in that system for effective outcomes. The framework described in this paper therefore emphasises the possibility of enabling communities to identify influential indicators by reference to those leverage points. This would help to prioritise the decisions and actions that best support progress towards sustainable community development. As indicators can influence transformational systemic change, the more powerful the indicators identified, the more far-reaching and sustainable the community development may be.

It is acknowledged that achieving genuine engagement by all members of a rural community in the whole process of identifying indicators of progress is likely to be challenging. It is critical that we create a respectful atmosphere and a joyful envisioning at the beginning. That should build the confidence of all members of a community, and their willingness to engage actively and push the boundaries of their experience. Confidence and engagement in the present moment foster the trust that *we belong to one community and we can together make our life better, reflecting what we really want, not what we'll settle for*, creating a sense of accountability for the identification of their community indicators, supported by facilitators.

We cannot identify and implement the drivers for sustainable rural community development overnight. It is challenging to identify effective indicators as leverage points and it is not possible to dictate outcomes without surprises. Nevertheless, if active engagement and effective learning processes are promoted, communities can claim genuine ownership and, in the process, actually find that co-creating, feedback and co-learning are "fun" – energising and enjoyable (Bosch and Nguyen 2013, Establishing Evolutionary learning laboratories for enhancing feedback and accountability Systems for Agricultural Development, The University of Adelaide, Phase I Grand Challenges Explorations submission (Unpublished work); Wells and McLean 2013). Communities can adapt to the emergent 'surprises' and, supported by their own systemic indicators, experiment their way to bringing shared visions into being.

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Chapter 3

SYSTEMIC INDICATORS FOR RURAL COMMUNITIES IN DEVELOPING COUNTRIES: EMPIRICAL EVIDENCE FROM VIETNAM

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By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

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Systemic Indicators for Rural Communities in Developing Countries: Empirical Evidence from Vietnam

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Abstract

Characterised by interconnectedness and interdependence amongst its parts, a community is complex and functions in a way that cannot be predicted with confidence. Community indicators therefore require a holistic and integrated approach if they are to reflect a community's wellbeing and help it move towards sustainability. This paper presents empirical evidence gathered from two cases in Vietnam as a part of our complexity-based action research, aiming to developing a systems-based framework for identifying indicators of progress for rural communities in developing countries (Nguyen and Wells 2016). The framework is an iterative cycle of adaptive learning and engagement, underpinned by complexity principles and systems based 'sustainability'. The cycle builds on the *One Way Forward* model and the hierarchy of system *leverage points* in order to identify influential indicators. The framework achieved good traction in the two

fieldwork locations with some valuable lessons in regard to the language used to explain systems and complexity concepts to the communities, and the effective methods to work with the communities. Results of the study and the lessons learnt are the focuses of this paper.

Key words: community indicators, community development, complexity, leverage points, shared vision, sustainable rural development

Abstract

Characterised by interconnectedness and interdependence amongst its parts, a community is complex and functions in a way that cannot be predicted with confidence. Community indicators therefore require a holistic and integrated approach if they are to reflect a community's wellbeing and help it move towards sustainability. This paper presents empirical evidence gathered from two cases in Vietnam as a part of our complexity-based action research, aiming to developing a systems-based framework for identifying indicators of progress for rural communities in developing countries (Nguyen and Wells, 2018). The framework is an iterative cycle of adaptive learning and engagement, underpinned by complexity principles and systems based 'sustainability'. The cycle builds on the *One Way Forward* model and the hierarchy of system *leverage points* in order to identify influential indicators. The framework achieved good traction in the two fieldwork locations with some valuable lessons in regard to the language used to explain systems and complexity concepts to the communities, and the effective methods to work with the communities. Results of the study and the lessons learnt are the focuses of this paper.

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1 Introduction

The interdependence amongst constituent elements of our society (community) and the interconnectedness of its socio - economic and ecological processes are generating complexity, and the level of complexity is increasing as the world changes in unpredictable ways. This complexity undermines the ability of individual perspectives-based indicators to reflect the values of the whole community and progress towards a common good. The field of 'community indicators' has developed to address this issue. Following the Russell Sage Foundation initiative of assessing local social conditions, community indicators appeared in the late 1980's/ early 1990s as the best means by which to reflect community wellbeing through the integration of otherwise isolated perspectives (Nguyen and Wells, 2018; Phillips, 2003; Sawicki and Flynn, 1996). The movement promotes community-based indicators and information to underpin the pursuit of sustainable development outcomes (Gahin et al., 2003; Nguyen and Wells, 2018).

The literature reflects international agreement on the functions of community indicators as a tool for defining, measuring, monitoring and managing the progress of community wellbeing (Progress Redefining and Network Earth Day, 2002; Wells and McLean, 2013). Notably, apart from prompting actions, well-chosen indicators can, themselves, influence communities towards transformational change without further intervention (Meadows, 1998; Nguyen and Wells, 2018). Furthermore, civic engagement, community planning and community based-policy making are acknowledged as important outcomes emanating from community indicators projects (Cox et al., 2010; Gahin and Paterson, 2001; Redefining Progress et al., 1997; Work Group for Community Health and

Development, 2015). “There is, however, still considerable debate about the best way to identify both the indicators and the sustainable standards they support” (Nguyen and Wells, 2018).

There has been a range of studies in this field acknowledging the importance of community indicators, linking them to sustainable development, quality of life and wellbeing of communities, but most of them have been conducted in urban areas in developed countries (Europe, North American and Australia) (eg., Besleme and Mullin, 1997; Daams and Veneri, 2016; Dluhy and Swartz, 2006; Morton and Edwards, 2013). Only a small amount of work has been undertaken on building sustainable community indicators in rural areas, especially in the developing nations (Cobbinah et al., 2015; Phillips, 2003), although rural areas where agriculture exists clearly have a crucial role to play in the world’s development.

Rural communities, in which family farms operated by household labour “produce more than 80% of the worlds’ food” (FAO et al., 2015, p. 31), are still living in hardship, poverty and low levels of well-being. There is a range of people with incomes below $1.25 to $2.00 per day residing in Sub-Saharan Africa and South Asia (Sumner, 2012). It is also estimated that approximately 795 million people (about one ninth of the world’s population), of which almost all of them (780 million) live in the developing regions, are suffering from malnutrition (World Hunger Education Service, 2015). Rural areas where 78% of the poor people of the world reside are still struggling to improve their situation (FAO et al., 2015; International Labour Organization (ILO), 2012; World Bank, 2014). Furthermore, this area is also strongly influenced by climate change and much dependent on natural resources (OECD, 2012; Slow Food, 2016). That is why the FAO, on World

Food Day, emphasized the importance of supporting rural communities towards sustainability and resilience (FAO, 2016).

The availability, and security of food and nutrition rely mainly on the sustainability of agriculture as well as rural community development. Sustainability, however, has experienced some difficulty due to the complexity and variation of challenges in rural areas (FAO et al., 2015). The traditional approaches underpinned by reductionism and linear thinking and top-down decision-making have been claimed as ineffective and inefficient ways to deal with these complex challenges, by many scholars (eg., Bosch et al., 2014; Reed et al., 2006; van Kerkhoff, 2014). The monitoring and evaluation of efforts based excessively on numeric indicators is also considered as a reason for less than fruitful outcomes in reflecting sustainability and wellbeing of communities (eg., Bagheri and Hjorth, 2007; Nguyen and Wells, 2018; OECD, 2015). The lack of a holistic approach to deal with rural complexity and less attention by scholars to rural community indicators is likely to be a cause of the unsustainability of rural development in developing countries. That is the main challenge many donors have been concerned about (Khan, 2000).

In the light of sustainability and complexity principles, and based in part on the *One Way Forward* model (Wells and McLean, 2013) and Meadow's discussion of *leverage points* (Meadows, 1999), our participatory systems-based framework for identifying indicators of progress for rural communities was conceptually introduced (See (Nguyen and Wells, 2018)). This framework is an iterative sharing and co-learning engagement process that extends from creating a shared vision and extracting its core messages, to identifying indicators of progress and determining what actions to experiment with. Importantly, this framework enables us to rank the indicators identified by communities by reference to 'leverage points'- the right places to intervene in the social-environmental system for

transformational change. Sense of ownership and accountability by all members of a community is strongly facilitated in the whole process, which aims to nourish their self-development and sense of agency.

An empirical study – a practical part of our qualitative action research, has been conducted to test the application of the proposed systems-based model to identifying community indicators in two communes (Vang Quoi Dong and Tam Hiep) in Binh Dai District, Ben Tre Province, Vietnam. This paper presents a detailed account of five steps in the cycle for identifying a shared vision, core values, systemic indicators of progress and compelling actions. The processes and experiences on the ground - what has actually been done and what has emerged, and lessons learnt - are fully described and discussed.

2 Community Indicators and Past Experiences

Community indicators have become widespread in recent decades, although indicators and information have been long used by policy and decision makers (Phillips, 2003). That highlights the growing scholarly attention to the involvement of local communities and their information in building their own decisions, rather than just as an input to government reports (Coulton and Fischer, 2010). This approach stimulates the sense of community responsibility for and ownership of sustainable development efforts in rural communities, particularly in the Third World.

Community indicators can help communities to track progress of their development by answering questions about whether a community is functioning and moving in the right direction. This role is more important than measuring what has already been done in the community. They are “bits of information”, but when combined they can generate a picture of a whole community system (Norris, 2006; Phillips, 2003). And if true

integration of individual perspectives drives the design and implementation of community indicator projects, indicators will reflect community wellbeing (Nguyen and Wells, 2018).

The literature reveals a variation in and debate about the best way to identify community indicators. First, the number of working steps in the frameworks differs, even though they are similar in thinking flow (from determining goals, to developing/selecting indicators, collecting data and reporting). For example, 10 steps (Redefining Progress et al., 1997), 9 steps (Progress Redefining and Network Earth Day, 2002) and 12 steps (Reed et al., 2006). The feature open to question in all the frameworks is that the purposes of indicators projects/processes and potential indicators are established by a working group at the beginning of the process that identifies indicators. This pre-work may well influence the thinking of community members and even constrain their openness to possibility when they subsequently have an opportunity to generate their own vision and priorities, share their thoughts and make decisions (Nguyen and Wells, 2018).

Second, the indicator areas (frameworks, domains or categories) explored and mentioned in the literature are varied. For instance, “triple-bottom line” (eg., Adams and Wiseman, 2003; Meadows, 1998); Herman Daly’s Triangle (Meadows, 1998); and more recently, one focussing on a sense of harmony that reflects community wellbeing (such as Community Indicator Victoria, (Cox et al., 2010). The diversity in proposed indicators reflects either the difference over time in the perspectives of scholars in developing the frameworks, or the concerns and priorities of communities where the frameworks are applied (Nguyen and Wells, 2018).

Third, there is disagreement about whether indicators should be qualitative or quantitative. Numerous scholars believe that we should use both quantitative and

qualitative indicators (eg., Boarini, 2011; Gahin and Paterson, 2001; Noll, 2002). Nguyen and Wells (2018) noted that "numbers alone are not able to reflect the multifaceted and holistic wellbeing, including tangible subjective elements". Some assume that "quantitative information" is able to measure the wellbeing of community, simply because it is measurable (eg., Besleme et al., 1999). This is in line with the perspective of those who seek to identify quantifiable measures in monitoring and evaluation of interventions (eg., Gertler et al., 2011; Muller-Praefcke et al., 2010). Quantitative indicators help to acknowledge and quantify separate parts of a system, but they may fail to grasp other, whole-of-system factors that strongly influence a community's overall quality of life, such as security, educational services, local collaboration and satisfaction (OECD, 2011, 2015; Wells and McLean, 2013).

The principal methodology for establishing community indicators is participatory. The participation is here explored from two perspectives. Stakeholder involvement or community member engagement in the whole process of identifying indicators (Leeuwis, 2000; Mathbor, 2008) is the main expression of participation. True participation can promote wellbeing through enhancing social relationships, networks and democracy (Sirgy et al., 2013; White and Pettit, 2004). Citizen participation is therefore seen as an important subjective indicators (Phillips, 2003). Nevertheless, participation described in the literature seems to pay attention to awareness only, rather than promoting the genuine engagement of all community members (Sirgy et al., 2013).

Another facet of participation is the position of the researchers in the communities with which they are working. Chambers (1983) notes that outsiders (researchers or practitioners) cannot capture the rural situation of a community in the typically rushed visit. Recently, this perspective has been reinforced by van Kerkhoff (2014) who argues

that researchers should become “insiders” and part of a community system in order to understand it deeply. This helps the community achieve effective indicators and sustainable outcomes, as the community members, collaborating with researchers, can generate timely responses to any emergent phenomena that appear as feedback from the community system.

3 Complexity Approach to Sustainable Rural Community Development

An understanding of complexity and complex adaptive (‘living’) systems has increasingly informed our engagement with social and natural ecologies. Differing from the ‘Newtonian’ model, which gives prominence to “mechanical laws” and “linear causalities”, complexity theory emphasises “emergence”, “multiplicities”, interconnectedness and interdependence (Styhre, 2002). The world functions as a living organism that can evolve and adapt to the change of its environment (Innes and Booher, 2000; Wells and McLean, 2013). In other words, it is complex, adaptive and resilient, and it changes because its parts change. The parts are interactive and intrinsically interconnected and are affected by the environment. Due to this complexity, such systems are uncontrollable and future changes are unpredictable. Thus, the interventions that are developed by those employing a reductionist perspective often fail to achieve sustainable outcomes because those interventions, although directed at one part of the system, affect the system as a whole and typically produce a range of unintended, often perverse, consequences.

A community is a complex system. The complexity brings challenges in identifying community indicators. This work is more challenging for rural communities in developing countries as many difficulties (e.g., isolation, vulnerability, poor basic services and mono-productive means) act as barriers to rural people developing and using

indicators for community development towards sustainability (Adisa, 2012; Thomas and Amadei, 2010). As a living system, community "lives" through its interconnected and interdependent elements, and separating or quarantining individual problems from the whole system, in order to 'solve' them, has proved problematic or ineffective. This suggests the need for a holistic or whole -of-system approach that can overcome the limitations of linear approaches to identifying indicators that reflect the whole community's wellbeing and vitality and facilitate the pursuit of sustainable outcomes (Morton and Edwards, 2013; Nguyen and Wells, 2018; OECD, 2011).

Sustainable rural community development seeks to improve those things that nurture the sense of well-being such as community ownership, local leadership, local cooperation, motivation and accountability. They are "both the means and the ends of community development" (Cavaye, 2001, p. 3). Factors like these are less tangible, but they are powerful enablers for rural communities seeking a good quality of life. It follows that rural people must be respected and empowered if they are to describe, implement and monitor what they think is valuable, for and by themselves. But the multi-dimensional nature of, and interconnections within, 'well-being' reflect the complexity of rural systems and add to the challenge for communities trying to identify appropriate indicators and to monitor and observe their progress. Initiatives for rural areas should enable the communities fully to engage and own the collective process and its outcomes. That process helps the organisational community to become a self-reliant and adaptive system, by connecting the system to more of itself (Wheatley, 2006).

The following is a brief description of the One Way Forward model - one of the dynamic frameworks that pursues sustainability in organisations – and Leverage Points, the best

places to intervene in systems for transformational change, in the context of rural community indicators.

One Way Forward model

The *One Way Forward* model (Wells and McLean, 2013) is a mechanism that facilitates "transformational change for sustainability" in organisations. It is underpinned by the principles of complexity, honouring uncertainty and the whole system. In this sense, strategic decisions are seen as experiments which are made based on lessons learnt from trial and error. The experiments are orientated by a shared vision of "what we really want, not what we'll settle for", reinforced by the process of extracting core values and identifying indicators of progress. *One Way Forward* enables organisations to engage with complexity in order to achieve sustainable outcomes.

Rural communities have been struggling with many difficulties such as isolation, vulnerability and poverty (Chambers, 1983; Ha et al., 2016), which are likely to make rural residents less confident to express themselves. Those involved in rural development must learn how to use approaches that enable rural people to increase their self-respect and their sense of agency in developing their own communities. *One Way Forward* presents as one possible way to do that by flexibly using participatory approaches to facilitate the engagement of all members of a community. It creates a comfortable "space" in which community members can think about and share how they want to experience future community life together. This starting point is crucial if members are to feel that they belong to their community and have a responsibility to "fight" for their community goals, by identifying and indicators of progress that support collective actions in a complex environment (Wells and McLean, 2013). This model could be considered as one

tool for facilitating behavioural change in rural community lives, to pursue community wellbeing.

Leverage points

It is time for rural development initiatives to move profoundly towards change in behaviour rather than just awareness. In other words, the behaviour of the people, as a central element in the community system, should clearly be highlighted as a target of rural development endeavours in order to facilitate a change in the system behaviour. Sirgy et al. (2013, p. vi) argues that projects still "focus on awareness" when noting the importance of extending direct participation. Khavul and Bruton (2013) also recommend that researchers focus on behaviour in order to deal with sustainability and poverty in developing countries. In order to obtain enduring behavioural change, we can look to the use of influential leverage points

Leverage points are the interest of scholars who believe in "points of power" within a system. They are "right places in a system where small, well-focussed actions can sometimes produce significant, enduring improvement" (Senge, 2006, p. 64). The author of a list of 12 'places to intervene' in a system, Meadows (1999) argues that intervening at these points may be an effective way to catalyse change in the behaviour of the whole system. She also argues that "Indicators are leverage points" (Meadows, 1998), along with their role of monitoring progress. The 'right' indicators can influence change in the system towards the desired outcomes. Nevertheless, the most influential leverage points are the least concrete and the hardest to activate.

4 Establishment of a Participatory Systems – Based Framework for Identifying Indicators of Progress for Rural Communities in Developing Countries

The framework for community indicators in developing economies (Nguyen and Wells, 2018) (Figure 1) is inspired by "the principles that emerge from our understanding of complexity and complex systems and sustainable development". It seeks to build on the *One Way Forward* model (Wells and McLean, 2013) with the addition of reference to leverage points (Meadows, 1999). An important factor is that this process enables the communities to identify influential indicators that could "prompt highly leveraged actions and speed up progress towards reaching the community's goals" (Nguyen and Wells, 2018).

This model consists of five steps, starting with co-creating a shared vision or story – the fullest goal of a community for their development (step 1), then extracting the core messages from the vision – the key values of the community that characterise its health, vitality and wellbeing (step 2) in order to identify indicators of progress based on the values (step 3). Before agreeing on what actions to experiment with as the means to bring the vision into being (step 5), the most influential community indicators, based on the core values, are identified by reference to their standing as leverage points (step 4), with a view to recognising the most powerful places for intervention. Both influential indicators and the agreed actions which, are treated as experiments –the community will learn lessons from the systems feedback (the observed consequences of implementing its decisions) when the community's resources are applied to the agreed actions (step 5). Reflection (step 5) is an opportunity for the community to develop an insight into their experiments and the community's capacity and capability, and how the community can

act more tellingly in the next cycle of community development, through the participatory systemic process of refining indicators and actions.

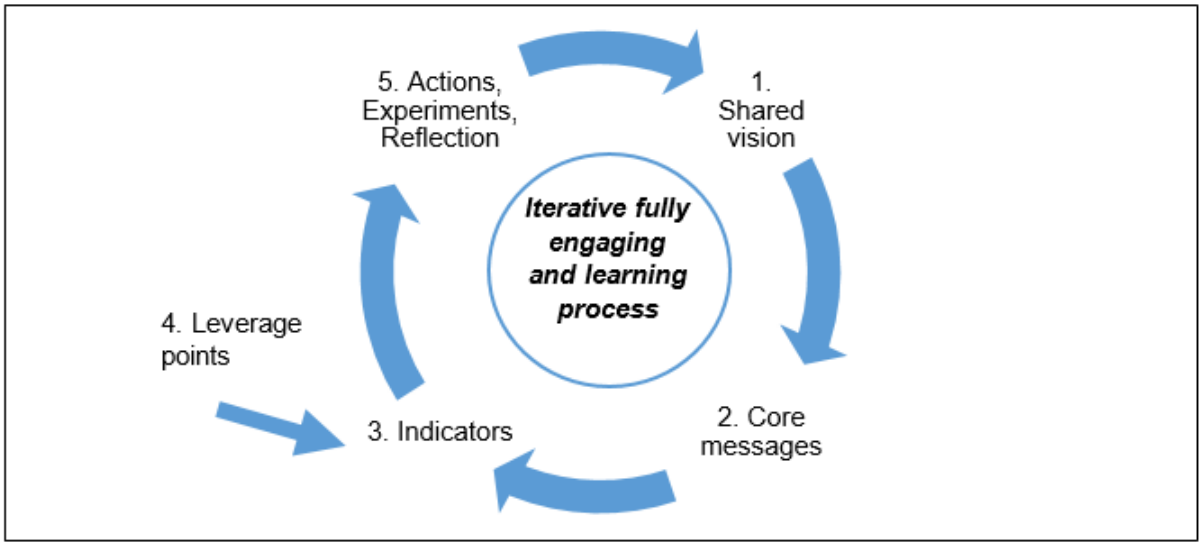

Fig. 1 Participatory systems-based framework for community indicators (Nguyen and Wells, 2018)

This process is an iterative cycle, reflecting the way a complex adaptive system functions emergently. Learning, reflecting, refining and experimenting never cease in response to the emergent shape of communities. Decisions (indicators and actions) made today may not be effective in the future (Farley and Costanza, 2002), hence this framework provides a mechanism of capacity building for the communities, who listen to their systems' feedback in order to adapt to design changes (Meadows, 2002).

By honouring the values of community self-respect and self-development in the course of rural community development, the process enables and facilitates the uniting of all community members. Not only leaders and outsiders (as researchers or facilitators) engage in the process – the more members involved, the greater more capable the community becomes in crafting a sense of wellbeing.

Although it avoids linear processes for engaging with complexity, the proposed framework is simple and concrete enough to be easily accessible and applicable. The limited education and theoretical knowledge of rural people, especially those in developing countries (a product of isolation, poor infrastructure and low income) underpin the necessity for a framework of this style. Nevertheless, rural people possess accumulated experience and practical knowledge that they can bring to new approaches, generating fruitful outcomes if those approaches are communicated and facilitated well. The use of arrows to indicate the phases and a circle to represent the cyclical/iterative nature of the process assist rural participants to follow the flow of this process more easily. The arrows and circle differentiate this process from conventional "closed" and "linear" thinking, and unambiguously show an alternative pathway. As genuine participation and commitment from all community members is at the heart of a systems approach (FASiD, 2010; van Kerkhoff, 2014), it is critical that we learn how to make it easy and comfortable for rural communities to engage with the process.

5 Site Pilot Background

As mentioned above, this research was undertaken in two rural communities (Tam Hiep and Vang Quoi Dong communes) in Binh Dai district, Ben Tre Province, Vietnam. Binh Dai is one of the three coastal districts of Ben Tre province which is located in the downstream area of the Mekong delta and bordering the East Sea. Tam Hiep commune is an islet where approximately half of the area is used for agriculture with the main crops being longans and other tree crops (lemon, pomelo and almond) (Community Board, 2015), while Vang Quoi Dong is on the mainland and grows rice and coconut, with the trend being a slow decrease in rice and an increase in coconut. Longan is the main source of income for Tam Hiep and coconut for Vang Quoi Dong is. Socio-economic

characteristics (e.g., rate of poor and near-poor households, illiterate and income) of Vang Quoi Dong and Tam Hiep are similar (Ho Chi Minh City Institute for Development Studies, 2011).

6 Process Steps, Results and Discussion

Co-creating a shared vision, teasing out core messages/values, identifying indicators and ranking influential ones, and determining compelling actions/experiments were conducted on our first field trip. The outputs generated (with appropriate facilitation), indicators and strategic actions which the community members decided to try, were due to be implemented after the researchers had departed. We will return about twelve months after these first workshops, to facilitate a process of community reflection on its experience and its progress. A forthcoming paper will discuss the results unfolding from the first workshops, the communities' reflections on those results, proposed improvements to our framework and a set of principles for undertaking this process in rural settings in developing economies. The full description of what occurred and was achieved during the first workshops is presented below.

Five half-day workshops were organised in the meeting hall of the People's Committee in each commune. Although we intended to encourage and invite all of the local people, the limited resources (research budget and hall capacity) and the "shyness" of many commune members constrained participation. If the workshops had been conducted by the communes themselves, it is possible that these issues may not have occurred. Approximately twenty five participants joined in (a similar number in both communes), including a vice-head of commune, communal extension staff, some representatives of community organisations, heads of villages, and representatives of poorer, middle and wealthier households. An extension staff member of Binh Dai Agricultural and Aquatic

Department – a “close friend” of local communities (Nguyen and Wells, 2018) – participated in the workshops as a co-facilitator and recorder.

Following an introductory session, the five steps of the iterative cycle were introduced through five questions, corresponding with the objective of each component of the process. This is a dynamic and evolving process – working adaptively to context, emergences, and outcomes of actions and reflection in every step and cycle, hence these questions are raised accordingly to effectively respond to that kind of systems’ feedback.

6.1 Introductory session

Establishing an open and joyful atmosphere, the participants’ understanding of objectives, process steps and content, and a willingness to engage fully in the whole process are the main focuses of this session.

As the framework for systemic indicators identification is underpinned by the principles of complexity and sustainable development, the facilitators (researchers) began by explaining that concept. The terms ‘complexity’ and ‘thinking in systems’ were very strange and abstract for the participants. They had never heard of systems or related terms before. Although, the facilitator tried to explain by the use of simpler words, it was some time before the participants understood. The words “uncertain” and “unpredictable” (used to talk about the nature of complexity and our world’s future) seem to mystify the participants. The atmosphere was, at that time, quiet and the participants’ faces showed that they were anxious and perplexed. Nevertheless, when a simple explanation was patiently given, the sense of comfort and cheerfulness within the group returned. Avoiding words which carried negative connotations, we used words like “connectedness” and “interrelationship” to explain their community functioning as a

system; using “emergent outcomes” to allude to the messiness and unpredictability of complexity; mentioning “multidimensional cause – effect relationship” to refer to decisions that are made and tried today and the uncertain future outcomes. There is no correct “formula” for all circumstances or all communities, hence gaining a clear understanding of the community context, enabling the choice of an accessible and appropriate language, is vital if we are to achieve enduing outcomes.

The participants are familiar with training conducted by experts and practitioners. In such training (both in a hall and on a farm), they often listen to the trainers and simply do what trainers advise. They have very few chances to think, speak and discuss as they were able to in these workshops. That is why they called the facilitator “teacher” in the beginning of the opening session and during the workshops sometimes, even though it was explained that *they* are the centre of the process and what they do in the workshops belongs to them, and the facilitator will learn from that.

6.2 Step 1: Creating a shared vision - How do we really want to experience life and living together in our community?

This envisioning process aims to achieve a four-fold benefit for rural communities. (1) Articulating a shared vision that is not a one- line statement (as many companies create), but a values-rich story that encompasses the individual stories of all participants about their aspiration for their community (Nguyen and Wells, 2018). The agreed vision seeks to capture the ideal, reflecting all community members’ concerns and action settings (Ziegler, 1991), but it should also be set within boundaries by respecting such factors as community context and history (van der Helm, 2009), and what we know about how the world works. That ensures that the vision is appropriate and “responsible” (Meadows, 2014). (2) Providing a sense of “common ground” for the participants (Wells and

McLean, 2016), regardless of position or level of wealth in the community, supporting an equal "voice" for everyone in the shared vision, agreed indicators and joint actions. (3) Building trust in each other, trust of the people for the leaders and outsiders and vice-versa (Wells and McLean, 2016). (4) Stimulating community members' confidence, self-respect and co-learning in pursuit of sustainable development outcomes. This aims to foster the commitment and capacity to work together to bring their shared vision into being.

In Tam Hiep commune, some poorer people and a few women seemed to lack confidence to actively participate in the workshops. In the beginning, they refused to speak, giving only a smile or saying "I am illiterate" (actually they are not, even though they did not go to school) or "I do not have anything to say". They were, however more confident when being made aware that there were no wrong ideas and that all opinions are equally respected regardless of who gives them. Respecting participants and building their trust is crucial if facilitators are to engender a fruitful discussion.

In Vang Quoi Dong commune, the envisioning process was more joyful and relatively straight forward. There were fewer very poor participants and more community leaders in the workshop, resulting in more confidence and active participation by almost all the workshop participants. This more engaged and confident dynamic may have been enhanced by the lessons the facilitator learnt in the Tam Hiep workshops, in terms of using more appropriate and local language.

By dividing them into small groups before gathering as a whole, all members had the chance to tell their own stories about how they really want to experience life together in their commune. Without this activity, the low "voice" members may not have chosen to talk or been able to claim the "right" to talk in the beginning when their confidence and

sense of trust were fragile. Sharing individual stories and co-creating each small groups' shared vision, before shaping the commune's shared vision, enabled envisioning to be a relaxed and joyful process. Although the participants were a little tense in the beginning, as they had never experienced a similar process, they became more and more natural when encouraged to surrender to the process. They sometimes even articulated visions beyond the capacity of their current reality to deliver, saying "oh, we are wishing, we wish that…", and even though they moved to qualify those visions, responsibly, in the light of the 'realities' of their community, the willingness to explore possibilities so far outside their current experience was a reflection of their engagement. All participants were happy with their shared vision.

Visual aids played an important role in the envisioning process. The participants were so excited to select from an array of pictures (photos of every facets of life and life experience) as "props" to help them to express their aspiration. These photos, and their diversity, encouraged the participants to think more widely and to speak from the heart – that is, not to over-intellectualise. Using big sheets of paper to capture all the p key words from their stories helped to neutralise the differences of power, position and wealth in the communes. That also made sure that no individual felt "left behind" when individual stories were gathered up into a group vision, and that those who had "weak" voices were not drowned out by those with dominant voices, when they moved on to create the shared vision of the whole commune. Both communes articulated organically their responsible visions as all participants had a chance to share their stories (Meadows, 2014; Wells and McLean, 2013) (See Appendix 1 for the visions).

The task of envisioning was joyful and it seemed to flow naturally – the vision is already present and just needs to be recognized and expressed (Wells and McLean, 2013).

Participants developed “common ground” (Weisbord et al., 2000), and a “shared platform” (van der Helm, 2009) to permeate the communities and “uplift” their aspirations (Senge, 2006, p. 193). Trust, confidence, and self-respect were built as active participation in and commitment to the process gradually increased.

6.3 Step 2: Extracting core values (messages) from the shared vison - What are the core messages in our story?

This work was the easiest and most relaxed when the participants thought hard about their priorities, concerns and the values of their community reflected in the shared vision. At this time, they had the opportunity to brain storm ideas and then to work collaboratively when grouping and categorising their core messages. Again, visual aids (colour cards) stimulated their willingness to join in.

Interestingly, the illiterate, rather than refusing to participate, actively created the chance to be involved by asking others to help them write their ideas on the cards. That alone was an important indication of the trust and self-respect built through the envisioning process. They were determined not to be left behind, and to see their contributions included in the collective outcomes and their peers supported that desire. The non-intellectual, non-analytical nature of the envisioning process, with its emphasis on how we really want to experience or feel, might also have encouraged them.

6.4 Step 3: Identifying indicators based on the core messages - What are the best indicators of progress towards bringing our shared vision into being?

Identifying indicators was a challenging task. Although the word “indicators” was not completely new to participants (they had already heard about the 19 indicators issued for the National Target of Building New Rural Areas Program), they had never participated

in a process of identifying indicators. They may well have known and informally made use of some signs to predict events happening in their daily life, but they found it difficult to think about and identify “more meaningful” indicators that could both assess and assist the bringing of their shared vision into being.

Community wellbeing may be differently perceived in different places and times, as different people have different perspectives that are influenced by culture, environment and economy, and the special interests and values of each community. Urban communities – containing business people and well informed residents (Innes and Booher, 2000) – may place a high value on such things as the respect of privacy. Not surprisingly, rural communities value good neighbourhood relationships, as such communities are places that witness a range of activities that require collective responsibility and have simply developed a culture of connection and collaboration. The differences in what is valued most leads to differences in goals. Community indicators should reflect the different communities’ interests, goals and contexts. It appears that although the indicators identified in the two communes have some similarity as the communes have homologous rural characteristics, they still contained the distinctions that reflect the different identifiers and the specifics of natural environment crops, strengths and weaknesses, leading to different concerns and priorities (Nguyen and Wells, 2018).

Rural community indicators reflect the more experiential (indigenous) knowledge of farmers, as most of the community members work on farms and in other related activities. The indicators, for example, reflect a community’s interests in sustainable agricultural production (organic farming) that can contribute to resilient community thriving. In this context, indicators are more likely to be quantitative. Intangible facets of community, such as close knit relationships in families and neighbourhoods, happiness, leisure and

respect more likely appear in qualitative and subjective indicators – they require communities to feel and observe.

6.5 Step 4: Ranking the indicators, based on core messages, by reference to leverage points - Which indicators are leverage points that can powerfully influence positive transformational change?

Identifying indicators based on core messages was easier than recognising leverage points. The concept of leverage points is not difficult to grasp, but it is not easy to differentiate the levels of leverage points, and categorise indicators based on them. Therefore, the questions asked needed to be framed in ways that were easily accessible to workshop participants: *Which are important indicators that can influence our community to achieve positive transformational changes? Which are important indicators that can be used to obverse (and measure) unfolding changes in our community? Why are they important? When we think about making progress towards bringing our shared vision into being, what are the little things that tell us a lot about that progress?* The answers they provided were matched with the descriptions of different levels of leverage points (See Meadows (1999)) by the facilitators and then placed in a matrix table (See Appendix 2 "Matrix of systemic community indicators" for details). As we anticipated in a previous, conceptual paper (Nguyen and Wells, 2018), not all the levels of leverage points were explored, but several indicators were identified as highly influential.

As anticipated, the development of community indicators takes time (Progress Redefining and Network Earth Day, 2002), especially identifying the most influential community indicators – the more powerful they are, the more difficult they are to identify (Meadows, 1999; Summers et al., 2015). Wells and McLean (2016) conducted an indicator

identification in Adelaide with Natural Resource Management stakeholders from Federal, State and local government, NRM board members, scientists etc. and found that indicator identification was more laboured, intense and messy than the more 'natural' process of envisioning For rural communities in developing countries which are isolated and vulnerable (Chambers, 2012) and where people have limited education and even less opportunity to become well acquainted with systems concepts (Nguyen and Wells, 2018), the challenge seems to be even greater.

In fact, many of the workshop participants in the two communities were, at some level, able to overcome the challenge and to gain a better understanding of how complexity and systems concepts related to their community's lives. This was, perhaps, a reflection of that "systems intelligence" that would enable them to sense, learn and adapt to complex environments (Hamalainen and Saarinen, 2008; Saarinen and Hämäläinen, 2007; Wells and McLean, 2013).

Indicators have often been described as a tool for measuring and are therefore often required to be measurable (eg., Besleme et al., 1999; Muller-Praefcke et al., 2010). Nevertheless, the shared visions were largely a reflection of community members' feelings, and the indicators identified in the two communes were often qualitative and subjective. They could not be measurable, but they were observable or accessible, tracking what is unfolding in the less tangible landscape. This is consistent with what Work Group for Community Health and Development (2015) says about "leading indicators" – telling what is coming or trending, rather what has happened (Wells and McLean 2016).

After completing this final phase of the workshop process, both facilitators and participants were exhausted, our faces became red with exertion and all backs sagged into

the chairs, but our eyes still sparkled (Meadows (1998) identified shining eyes in children as a powerful systemic indicator of wellbeing, a little thing that tells us a lot about the whole system). That means the development of indicators, especially recognising powerful indicators, is laborious and time-consuming for rural communities, but processes that enable genuine engagement, along with support from experienced, capable and committed facilitators, can bring them to a useful and satisfying outcome.

6.6 Step 5: How will we keep our shared vision present and lively as we make decisions about our shared future?

Being owners of the process, community members understand how indicators reflect their interests, concerns and priorities, and so, as leverage points, it may be easy, in theory, to "move indicators into action". Nevertheless, that movement into action is unlikely to happen in the short time encompassed by the workshops described here. The duration of the workshops was insufficient for the participants to absorb deeply and entirely what they had encountered, and no specific strategic 'experiments' emerged. We did not rush the participants to decide on actions as we always kept in mind that the process and its products belong to the community. The communities may use the indicators, and the core messages or values that underpin them, to inform actions that they will experiment with after the researcher leaves. The outcomes will be apparent when we return to the communities to reflect with them on their experience.

Beyond the important role of monitoring community actions, the identified indicators themselves may prompt action directly (Meadows, 1998; Nguyen and Wells, 2018) – If we want to observe more of this, perhaps we should do more of that. Nevertheless, no one indicator is likely to encompass the entire system – they will be systemic in their awareness of connectedness and complexity, but also partial to some extent. As such,

there may be some risk in allowing a particular indicator to shape actions directly – such actions may, unintentionally, undermine the very holism that systemic indicators are looking to promote. It may be preferable simply for indicators to retain their central role, *collectively* monitoring the trends that emerge from community actions, made by reference to the shared vision and its core messages, and so informing subsequent decisions. This is the role favoured for indicators by many scholars, in theory and practice (eg., Besleme et al. (1999) and Progress Redefining and Network Earth Day (2002)). The community data gathered, as required by the indicators, monitors progress towards the shared vision and underpins the community's next decisions.

7 Lessons learnt

(1) Where outside facilitators are required to support rural communities, it is important that they are flexible and adaptive. They must have a deep understanding of a community, in relation to its culture, languages, and specialization or education level, so that they can find a way to conduct workshops that suits the particular characteristics of *that* community. Particular attention needs to be given to the following:

Language: As mentioned above, systems and complexity terminology that is strange and abstract for rural people should be avoided as it can cause misunderstanding and may be counterproductive. The more 'local' language used, the more easily the people can understand, and the better the chance of a productive outcome.

Working period: The process may not work effectively if rushed, or if undertaken without the community's willingness and readiness. No rigid timeframes should be fixed in place, rather the process should be allowed to unfold, in keeping with the evolving understanding and engagement of participants.

Steps sequence: It is not always necessary to follow a strict sequence of steps. Communities may choose to progress to the next step or go back to the previous one, to add, to modify or delete, if necessary, in order to make sure the results satisfy and do justice to all participants.

(2) It may be tempting to compare shared vision with the ultimate 'goals', and core messages with the 'objectives' of the whole system. But the vision and core messages are much broader and deeper in compass, and reflect the feelings and aspirations of communities, rather than the tangible and self-limiting descriptions that commonly characterise goals and objectives.

(3) Core messages/values could be the drivers for that high quality of community life that rural development seeks. Thus, they may themselves play the role as good indicators and represent the most fruitful basis for identifying experimental actions, designed to pursue the shared vision (Nguyen and Wells, 2018).

(4) It appears that the values, concerns and priorities of communities surface naturally throughout the process of identifying community indicators, without being led or constrained. We planned to check the presence of agriculture in the co-created visions, but it was regularly mentioned by the participants during envisioning and the other steps. Farming and related issues in rural community systems form a contextual boundary – a core systems concept (van Kerkhoff, 2014; Williams, 2010) – and were referred to as the most important source of their livelihood, as well as central to their culture, providing not only income and sustenance, but also joy.

(5) The concept of systemic community indicators was new to the communities with whom this research was conducted, so it was not to be expected that they would move all

the way through the learning cycle to the point where they were confidently deciding on experiments – things to try – against the backdrop of their shared vision. Their principal focus was on engaging, for the first time, with the idea of indicators, and the way to identify and use them. Nevertheless, these communities did start to identify their own systemic indicators and, through their engagement with the process, to gain a sense of what the cycle of envisioning and experimentation could offer. Shifts in community awareness and, reflecting that, in behaviour were already apparent.

(6) Separating the participants into small groups before gathering as a whole, as we did when envisioning, could be usefully applied to the step of identifying indicators based on core messages, rather than attempting that as a whole-of-workshop group. It may better elicit the contribution of every member and a richer range of possible indicators. As a result of time pressures and of some dominant participants, the quieter or less confident participants may not share their ideas, however well-formed they may be in their heads. Groups of six to eight members might well prompt a broader contribution than can be drawn from a plenary session of about twenty five, when developing a list of possible indicators.

(7) The quality of community indicators should be evaluated on the basis of whether they can reflect the values, concerns and priorities of communities. It seems that no one can assess the indicators as well as the communities do themselves, because outsiders (experts and others living outside of the communities) cannot operate from the same level of feeling and experience – the rushed nature of their visits limits their insight into the communities (Chambers, 1983).

(8) Implicit in each indicator, especially subjective ones, there often exists a "story". Such stories capture the reasons why the communities chose those indicators. They clarify what

the communities would really like to monitor and measure. For example, “be confident to give ideas” in community meetings. Historically, many villagers would not want (or dare) to raise their hands to speak in front of a crowd, and perhaps did not actually think they needed to talk, when they were not encouraged by other dominant stakeholders, often the community leaders, or outsiders. Engaging with the process of identifying community indicators, they started to think that all community members should be responsible for contributing to their collective activity, and they came to the view that not hesitating to speak and share their ideas would be a good indicator of growing self-respect and wellbeing, in pursuit of their shared vision.

8 Conclusion

The application of a participatory systems-based framework for identifying indicators of progress for rural communities located in developing countries has produced valuable lessons for facilitators and provided community members with valuable experience in the continuous process of co-learning, sharing and redefining. The framework provides an effective pathway for a community to unite for the heathy and vitality of the whole community, not just individuals, through the stages of envisioning a shared vision, teasing out core messages, identifying indicators, ranking influential indicators and prompting strategic actions. The communities use indicators to monitor their actions, so as to keep the shared vision lively in the life of the community, reflecting and refining in an iterative cycle of improvement that honours the complex way our world functions. It is an on-going process of evolution, as the decisions made today may not meet future needs, in the face of unplanned, unpredictable emergence (Bosch et al., 2013; Farley and Costanza, 2002; Nguyen and Wells, 2018).

The products of the process (indicators and actions) are important, but the process itself is just as valuable, perhaps more so, as Senge (2006, p. 138) suggests in quoting Robert Fritz "It's not what the vision is, it's what the vision does." The inclusive, participatory process enables community members to come together to build a sense of ownership, trust and confidence– drivers of sustainable community development – while enhancing the community's ability to respond to complex issues in order to adapt to challenges and changes in ways that reflect what is most important to them.

In this sense, the systemic process of identifying community indicators stimulates a community to become an adaptive learning system (Innes and Booher, 2000; Nguyen and Wells, 2018). The process itself is also an adaptive cycle, as new activities are decided on and enacted based on the feedback generated by earlier decisions and outcomes. A forthcoming paper will explore the community experience of working with the systemic framework in the months following their initial workshops.

It is not easy to identify and utilise drivers of sustainable rural development in a short time (Nguyen and Wells, 2018), as the outcomes of a community indicators initiative may take years to appear, and "realising the vision may take a generation" (Progress Redefining and Network Earth Day, 2002, p. 5). Yet, communities should make a start in the "right" way – that is, consistent with the way the world functions – and use their chosen indicators to monitor their efforts to bring a shared vison into being. "*Indicators don't guarantee results. But results are impossible without proper indicators*" (Meadows, 1998, p. 76). Without systemic indicators of progress, rural communities lack as the systems feedback that can support them as they make decisions about managing their communities for the collective future that they desire.

In this context, the 'sustainability' that sits at the heart of the shared vision, and which is monitored by the systemic indicators, is not a "product" that we can produce and hold (Hjorth and Madani, 2014). It could be said to be, rather, a *process* resulting from adaptive efforts that have to be owned and carried out by rural communities themselves, with support from committed facilitators. Or it can be understood as a way of *being* – the process helps to nurture a greater wholeness, individually and collectively, in a community's rich interactions with itself and with the complex world in which it is embedded.

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APPENDIX 1: Shared Visions

Shared vision of Tam Hiep commune

We want to experience a healthy, wealthy and happy life; Together building and protecting the environment; Individuals behave unselfishly; neighbours care and help each other; children respect parents and grandparents; live in a fair society. Everyone (especially children) has equal chances to be trained and develop their talent and personality. Everyone respects and preserves the national character. We want to have more chances to meet and exchange and learn from other communities. Everyone is in harmony with neighbourhood and natural environment, voluntary working for a better community.

Shared vision of Vang Quoi Dong commune

We want to experience a happy life without deprivation. Children are well cared for and trained. Health of everyone is well cared for. Children are respectful to parents and grandparents, and the elders are conscientiously respected and cared for. People have enough leisure time for entertainment and sporting in beautiful public places. We are more active to “own” our lives. We want to have enough jobs in the commune, and do not want to go out of the commune as hired labour. Everyone has equal chance to use resources. Neighbourhood sentiment is preserved and united. Everyone has attitude and behaviour towards the environment of protection and preservation of national character. Members and authority are united and members’ contributions are truly respected and considered in community’s decisions. Cooperation among farmers, the authority and traders is established and the community economy is sustainably grown.

APPENDIX 2: Matrix of Systemic Community Indicators

Systemic Community Indicators of Tam Hiep Commune

Levels of influential indicators **Core messages**	**Number/parameters**	**Rules of the system**	**Structure of information flows**	**Power (self-organizing)**	**Paradigm**
(1)Social equality	•	•	• Visibility of public information (transparency)	•	• Participation and contribution on decisions made in families and communities • Confidence to give ideas • Self-nominate to be leaders of organizations or volunteer to be in charge of community work
(2)Community healthcare	• Incidence of patient consultation • Incidence of infant and children mortality • Incidence of malnutrition in children	• Use of chemicals in food processing and production	•	• Areas for clean (and organic) agriculture production (longan and other crops)/ total	• Regular health check • Satisfaction with community healthcare staff and facilities
(3)Cooperation	• Number of production contracts	•	•	• Number of cooperative groups/interested groups in community	• Satisfaction with the levels of cooperation

(4)Community security and safety	• Number and seriousness of social problems (stealing, robbing, family violence, fighting, gambling…) • Number and seriousness of traffic accidents	•	•	•	•
(5)Cultural life	• Rate of poor households • Number and seriousness of social problems • Number of young people finishing secondary education	• Clean houses and community (no waste on roads) • Trees (environment) protection	•	• Solidarity in community (have constructive contributions to develop commune) • Sharing and caring about the neighborhood	• Respect each other both in families and community (respect for the older and tolerance for the younger) • Love of trees (environment)
(6)Education	• Incidence and seriousness of school violence (teachers hit pupils, pupils fight each other) • Number of students who win awards for excellent study or for examinations at different levels • Incidence of unemployment among those with formal education	• Study promotion activities • Formal cooperation between families and schools in education	• Visibility of curriculum • Parents are aware of their children's study progress and results, and attitude and behavior in schools	• Informal cooperation between families and schools in education	• Parents' satisfaction with meetings between teacher and parents • Parents' satisfaction with schooling • Children are happy to attend school
(7)Environment	• Proportion of area for clean and organic agriculture • Number and seriousness of illegal sand exploitation cases • Area of protected forests and trees in public places • Area of land lost because of sea encroachment (this commune is an	• Use of electric impulse tools for fishing • Rubbish left in the wrong places	• Formal complaints from neighbors (about bad smell of pesticides, manure…)	•	• Feeling of "green" • Feeling of "clean" • Electricity saving in public areas • Time hearing birds' singing

	island with the bank of 24 km. The area of this commune is declining due to the encroachment of the sea. The people wish to have a concrete dyke/jetty of 24 km) • Occurrence of wild animals (degree of diversity)				

Systemic Community Indicators of Vang Quoi Dong Commune

Levels of influential indicators **Core messages**	**Number/ parameters**	**Rules of the system**	**Power (self-organizing system structure)**	**Goals of the system**	**Paradigm**
(1) Sustainable wealth	• Sufficient Infrastructure (quantity and quality) (electricity, road, school, medical aid station, media, clean water supply) • Rate of homeownership and land for cultivation • Cases of social problems • Stable incomes • Rate of people going out of the commune seeking jobs • Rate of people having income in the commune (from handicraft, farm, fishing)	•	•	• Sustainably escape from poverty	• Feeling "enough" • Nutrition in daily meals • Time for leisure and spiritual activities
(2) Confidence and active access			• Self-develop plans • Actively contact relevant people or organizations for needed technical, market information. • Self-motivated in seeking efficient		

			production models • Creativeness in farming		
(3) Education	• Number of children stop studying at primary and secondary levels • Teachers training level • Proper level of teaching methods • Teaching and learning facilities • Number of students achieve high results, win awards from examinations and enter universities	•	•	High quality educational standards and facilities	• Satisfaction of parents and pupils with teaching staff • Children enjoy schooling • Care from teachers and parents for children
(4) Environment protection	• Area for organic (clean) agriculture • Number of trees (for shade, landscape and protecting environment) planted every year	• Treatment of sewage • Use of organic fertilizers • Illegally leave rubbish, especially throwing dead animals down channels • Illegally cut down trees/forest • Smoke from charcoal burners (coconut shells)	•	•	•
(5) Community healthcare	• Number of people taking regular health check	• Patients are examined and cared for	•	• High quality health care	• People taking regular health check • Satisfaction of patients with quality of

					healthcare staff and facilities
(6) Cultural/ spiritual life	• Number and seriousness of social problems (stealing, fighting, gambling, land disputation…)	• Public order(queue in line, argument, fighting) • Family violence	• Transparency in chances to access job and resource use, and contribution to community • Exchange of cultural and sport activities	•	• Self-respect and respect each other • "no need to lock our door when going out" • Willing to attend and display products in Coconut Festival (annually organized on provincial level) • Social equality • Family and community caring (gifts, sharing, celebration, activities for special days) • Time for entertainment and clubs
(7) Cooperation	• Number of contracts with enterprises to sell coconut and products made from coconut	• Formal agreements between farmers and local authority	• Agreements between farmers and local authority • Number of cooperative/ interest groups • Number of households joining in the cooperative groups	• Agreement between farmers and local authority • Creation of cooperative interest groups	• Sharing among neighborhood • Enjoy neighborhood • Satisfaction for the cooperation • Continuity of the cooperation

Chapter 4

A SYSTEMIC INDICATORS FRAMEWORK FOR SUSTAINABLE RURAL COMMUNITY DEVELOPMENT

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Overall percentage (%)	80%		
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i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

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A Systemic Indicators Framework for Sustainable Rural Community Development

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Abstract

Community indicators have been of special interest to scholars worldwide, because of their vital role in community development. Nevertheless, the best way to identify indicators is still unclear, especially for rural communities in developing countries where the complexity of rural systems give rise to special challenges. Following conceptual and empirical stages of the development of a systemic framework for identifying indicators for rural community in developing countries, our participatory action research moves to critical reflection, undertaken with the participants in the original fieldwork. This paper discusses findings from that reflection, in workshops and in-depth interviews, considered, also, in the context of our experiences in the previous stages of research. It finds that the positive impact of the framework was reflected in increases to the communities' human and social capital, although several weaknesses in the framework implementation were also revealed. This paper introduces reflection-based improvement to the framework and

also discusses a set of principles as a foundation for implementing the framework in rural settings in developing economies.

Keywords: Community indicators, living systems, rural community development, sustainable development, systemic indicators

Introduction

Rural community development has received a great deal of attention from scholars. Most efforts have focussed on poverty alleviation in agriculture-dependent rural communities in the Third World (Fischer and Qaim 2012; Ha et al. 2016; Herren 2011). But poverty is not the only problem faced by rural communities. It is just one factor, along with social inferiority, isolation, physical weakness, vulnerability, seasonality, powerlessness and humiliation preventing rural people from reaching well-being (Chambers 2012). That means community development is not best pursued by addressing a single issue, but rather by working on multiple fronts to improve the overall quality of community life. Community development looks not only to address physical (such as infrastructure) and economic elements (such as employment) but also human concerns (e.g.., health and leadership), social issues (e.g., networks and relationships) and the health of the natural environment, as they are all necessary facets of community vitality (Cavaye 2006; Phillips and Pittman 2014).

Community development is complex because communities behave as living systems - they are highly connected, but uncertain and unpredictable environments (Nguyen and Wells 2018; Wells and McLean 2013). Changes in one area of a system can generate either a positive or negative impact on other parts, the whole and finally on other related systems (Patterson 2010) and the scale of the impact might be much greater than that of

the original change. An improvement for the whole may sometimes be inconsistent with short term benefits to a part of the system (Meadows 2002). The parts, however, live in the whole and the health of parts and whole are interdependent. Solutions based on a narrow, parts-focused perspective have, therefore, often failed to generate sustainable outcomes and the indicators underpinned by that perspective are unable to reflect the values of the whole community (Nguyen and Wells 2018; Wells and McLean 2013).

Community indicators have been developed to monitor the progress of sustainable development by integrating isolated perspectives to reflect the wellbeing of whole communities (Gahin et al. 2003; Nguyen and Wells 2018). They are able to describe and monitor community development towards the common good (Nguyen and Well 2018; Progress Redefining and Network Earth Day 2002), and well-chosen indicators can, themselves, influence communities and support transformational change (Meadows 1998; Nguyen and Wells 2018). Moreover, the collective development of community indicators is an important opportunity for civic engagement, and information obtained from such processes provides valuable input to community planning and community-based policy making (Cox et al. 2010; Gahin and Paterson 2001; Redefining Progress et al. 1997; Work Group for Community Health and Development 2015). In particular, community indicators are important as community wellbeing and health differs significantly, depending on where the community is.

Although, the development of community indicators initially emerged in about 1910 with the social assessments undertaken by the Russell Sage Foundation, and was widely endorsed in the late 1980's to early 1990s, the best way to identify community indicators still challenges scholars (Cobb and Rixford 1998; Phillips 2003). Notably, there has been relatively little work undertaken on promoting and building community indicators in rural

areas (Cobbinah et al. 2015; Phillips 2003), particularly in developing countries, where people are facing deprivation and need more effective means by which to pursue community sustainability (Chambers 1995; Cobbinah et al. 2015; Nguyen and Wells 2018).

The complexity of rural communities renders them inaccessible to indicator development based on reductionism and linear thinking, as well as to top-down decision making designed to cope with rural challenges (Bosch et al. 2014; Reed et al. 2006; van Kerkhoff 2014). Community indicators developed in this more mechanistic way, may provide information for rural communities that monitors progress in each facet of community, but without capturing the overall picture. Meanwhile, we still seem to lack an effective, holistic way to deal with rural complexity and to identify rural community indicators that reflect a whole-of-system approach to sustainable development and community wellbeing (Nguyen and Wells 2018).

In response to this lack, a *participatory systems-based framework for identifying indicators of progress for rural communities in developing countries* (hereafter *systemic community indicators framework*) is conceptually introduced by Nguyen and Wells (2018). This framework is underpinned by sustainability and complexity principles and is based in part on the *One Way Forward* model introduced by Wells and McLean (2013) and on the analysis of *leverage points* provided by Meadows (1999). This framework promotes rural community development by establishing a comprehensive view of the whole living community system to identify systemic indicators and actions, and by itself intervening in the community by facilitating transformational change.

Community ownership and accountability are drivers of sustainable community development. They are formed and achieved only when genuine participation is ensured

(Cavaye 2001) and are dependent not only on the purpose and capacity of each project and research team, but also on the skill of the researchers (Greenwood et al. 1993). It seems that true participation of communities is rarely achieved, as the focus seems more often to be on “awareness instead of direct widespread participation” (Sirgy et al. 2013) and there remains a sense that the community are “invited” to projects (Cornwall 2008; Eversole 2010). The participation envisaged as central to this framework for identifying community indicators aims to foster co-learning, sharing, co-experimenting, co-monitoring, co-assessing and refining by the community’s members. With the support of the researchers, this can then stimulate community ownership and accountability.

As a part of an iterative, systems-based action research process, this proposed five-step model for identifying community indicators has now been tested in two rural communes in Vietnam. The process encompassed co-creating a shared vision, teasing out core messages/values, identifying and ranking indicators, and determining experimental actions. It was well accepted by and operated effectively in both communes. It achieved good traction with desired outputs -shared vision and list of ranked indicators, as well as some immediate collateral benefits in active community engagement and collective self-efficacy. A strong sense of community ownership and accountability was a noteworthy product of the whole process (Nguyen et al. 2018).

The next step in the participatory action research cycle requires reflection on the impact of the action taken. A follow-up to the initial fieldwork was undertaken in both communities, exploring the impact about twelth months after those first community experiments. The community’s engagement in this reflective stage is consistent with the participatory principles underpinning the research project. That is not only because “all stakeholders as experts with improtant knowlede and perspectives” in participatory action

research (Grantgraft n.d., p 3), but also because of the framework's aim to foster community ownership of the experiments and lessons, and a sense of responsibility for ongoing refinements. These are foundations for improvement to the proposed framework and the establishment of a set of governing principles.

This paper discusses the outcomes of the participatory assessment - the impacts emerging from the first workshops, the community reflections on those impacts, proposed improvements to our systemic indicators framework, and a set of principles that could underpin a process for identifying indicators in rural settings in developing economies.

Systemic Community Indicators - Reflecting Rural Complexity

Complexity challenges sustainable community development. A community is not able to achieve fruitful outcomes if it focuses on just one component or on each component in isolation, because they are all interconnected and interdependent. It is not able to solve one problem effectively or improve one part of the whole community without influencing the other parts, often in unexpected and unpredictable ways. The community's members are not able to consider the full, integrated picture of their development progress if they only use one-dimensional indicators. Complexity demands a holistic approach, providing insights into the whole community system.

As a 'living' system, a community displays complexity because of the interdependence of its parts and their influence on each other, and also because of its interaction with a changing, complex environment. Community life is uncertain and changes unpredictably – it is not possible to arrive at perfect decisions directed towards a desired goal, or ideal indicators of desired progress in community development.

The process (Figure 1) that underpins this research project enables the community to identify systemic indicators that can guide and orientate decisions made amidst the uncertainty and complexity of community life (Van Assche et al. 2010) and help to keep the health of the whole community system in mind when making decisions (Meadows 1998; Wells and McLean 2013). This process of identifying, experimenting, reflecting, learning and refining enables rural communities to adapt to unpredictable change and achieve sustainable outcomes (Nguyen and Wells 2018).

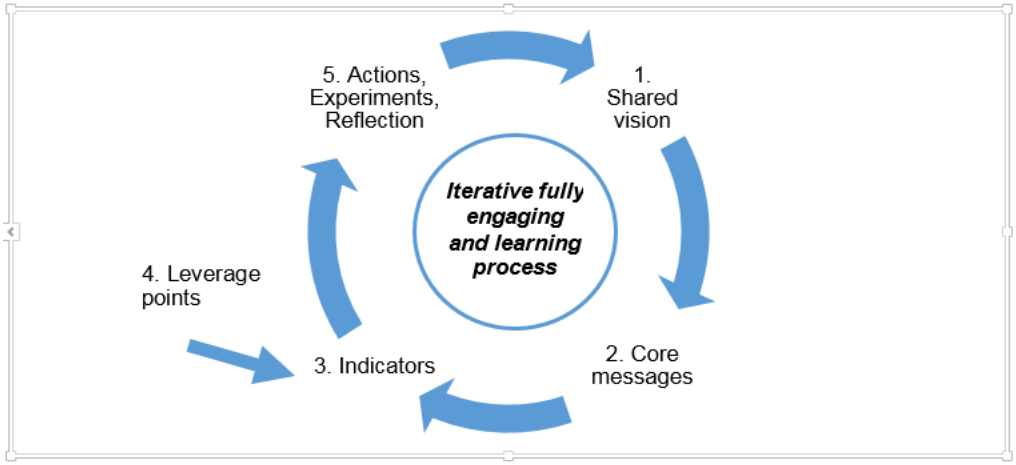

Fig. 1 Systemic community indicators framework for rural community development (Source: Nguyen and Wells 2018)

The community commences its cyclical development process by co- creating a shared vision – *"How do we really want to experience life and living together in our community?"*. The traditional approach, based on linear thinking and reductionism, tends to focus on what is 'wrong'. Systemic community indicators, on the other hand, do not focus on problems and objective 'problem solving', but rather on a more holistic goal– encompassing the community system as a whole, and reflecting the integrated values and priorities of the community. As we are not able to know exactly how the future will unfold, community decisions (interventions, actions and indicators) are considered to be

experiments, orientated by the community's shared vision and the vision's core messages or values (Nguyen and Wells 2018; Wells and McLean 2013).

Community development seeks initiatives for transformational change. Leverage points are the most powerful places to intervene for change in the whole system (eg., Meadows 1999; Nguyen and Bosch 2013; Nguyen and Wells 2018; Senge 2006; Wells and McLean 2013). In this light, the systemic community indicators framework is designed to help rural communities identify influential indicators, based on 12 levels of systemic intervention for leverage discussed by Meadows (1999). Influential indicators can influence change in the behaviour of systems, as they are, themselves, leverage points (Meadows 1998). "The more powerful the indicators are, the greater the leverage that can move a community towards sustainability." (Nguyen and Wells 2018).

Systemic Community Indicators - Supporting Sustainable Development in Rural Communities

Over the last two decades, rural development projects in developing countries in general, and community indicator projects in particular, have been implemented in many countries, by both non-government (mainly) and government organisations, and involved many international donors from developed countries. It is significant that the ideas and initiatives have tended to come from outsiders – donors, experts, practitioners and/or researchers. This kind of project is most likely prompted by good intentions and the pursuit of ideal outcomes for rural communities, but the sustainability of outcomes has proven to be limited (Chambers 1983; Khan 2000), as the projects often failed to locate the drivers of a sense of wellbeing and of sustainable development.

Achieving Sustainability by Facilitating Active Engagement

Community ownership, local leadership, local cooperation, intrinsic motivation and accountability could be drivers enabling rural people to develop communities sustainably. These are ideal foundations for rural community development endeavours (Cavaye 2001). Identification of systemic community indicators provides a chance for rural communities to nurture these drivers by fostering sharing, co-creating and co-learning amongst community members. Those communities also need to build the capability to undertake their own development initiatives. The next cycle could then be better than the previous one – a reinforcing feedback loop resulting from the adaptive learning and capability building that the process enables.

Figure 2, below, describes levels of community participation. In the case of rural community development, the process of identifying indicators enables the community members to reach the highest 'stair', as the process requires the players to engage fully so that they can design, implement and monitor development activities, learn from feedback, reflect, and respond with a new cycle of action. In other words, the process fosters community self-evolution, promotes a shift from passive to proactive, cultivates conscious behaviour that feeds and facilitates transformational change. The absence of transforming outcomes has been a weakness in rural development projects (Sirgy et al. 2013), and should be a prime focus in developing countries (Khavul and Bruton 2013). That does not necessarily mean that these communities do not require any support from outside. They may sometimes need assistance, but in a connected way – cooperation and collaboration.

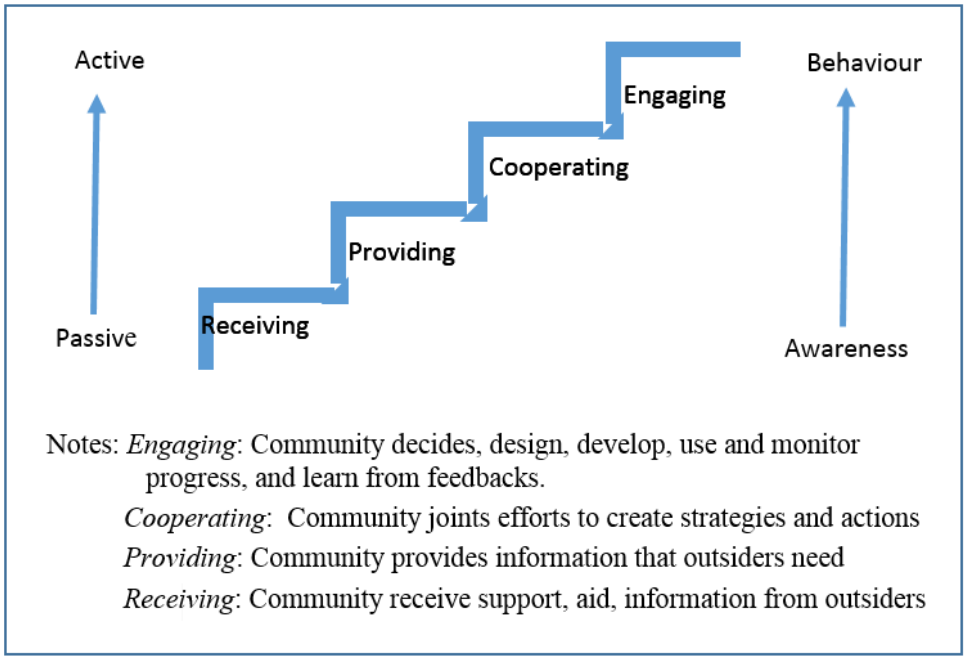

Fig. 2 Levels of community participation in community development (Adapted from Arnstein (1969), Choguill (1996), Eversole (2015) and Macdonal et al. (2012))

Participation in identifying community indicators involves the active engagement of all stakeholders. Genuine participation improves mutual understanding and accountability (Maani 2013; Maani 2002) and develops a sense of ownership of decisions (Dluhy and Swartz 2006; Ha et al. 2014; Stain and Imel 2002). An understanding of each other's mental models is essential for effective community communication and collaboration in identifying systemic indicators and actions, and experimentation towards the shared vision (Nguyen and Wells 2018).

The co-learning, sharing and collaborative evironment, and the open communication that the process facilitates, catalyses the emergence of community leadership. Responding to a dynamic context, local community leaders shape innovative ways of management based on lessons learnt from experiments in how to respond to complex challenges

(Heifetz et al. 2009; Yukl and Mahsud 2010). The term “adaptive leadership”, in this sense, does not mean that the leaders have power to control a community. Rather, they facilitate a process by which the community can engage with challenges that do not readily submit to neat, technical solutions, but are messy and ill-defined and, nevertheless, lie at the heart of the community’s common interests. The process provides space within which the community leaders and members, working with other stakeholders, including technical experts, can participate in heart-felt, adaptive conversations, directed towards community goals (Heifetz et al. 2009; McLean and Wells 2010). The full engagement of all community members enabled by this adaptive leadership ensures that members hold themselves mutually acountable for how they feel and behave, and for the consequences of their collective actions.

Achieving Sustainability by Focussing on Ultimate Ends and Wellbeing

The sense of community wellbeing is driven by subjective factors such as community ownership, local leadership, local cooperation, intrinsic motivation and accountability, as “they are powerful enablers for rural communities seeking a good quality of life” (Nguyen et al. 2018 (empirical part of this action research, under review)). They are not only the means by which the communities can pursue their desired outcomes, but also some of the outcomes that best reflect the community striving for sustainable development (Cavaye 2001). A systemic community indicators framework tracks the path by which rural communities are empowered by themselves (with support from outsiders if necessary) to make and implement decisions that give expression to what the communities most value in their collective life (Cavaye 2006; Nguyen and Wells 2018). Through a process of identifying indicators, and then experimenting and reflecting, rural communities are able to grapple with and adapt to the challenges of a complex environment (with respect from

outsiders), and to manage and monitor the emergent outcomes of decisions made in pursuit of their ultimate ends.

The language of "quality of life" and "well-being" has increasingly been the focus of discourses on development (e.g., Chambers (1995), Matarrita-Cascante (2010), OECD (2011), Morton and Edwards (2013), and Daams and Veneri (2016)), as these are the ultimate ends of communities and their members. It is not only the economic sector that is preoccupied with the "triple bottom line" – rural development increasingly seeks to integrate social interaction, environmental quality, and economic health – a kind of "common wealth" that underpins real sustainability (Figure 3). Well-being includes not only tangible considerations, such as education, health and employment, but also subjective elements like feelings associated with a high quality of life - satisfaction, freedom, happiness, power and self-respect (Boarini 2011; OECD 2011). This requires indicators with the capacity to reflect these dimensions. Systemic indicators that have their origins in a shared story (shared vision), co-created by of all community members, reflecting their collective aspirations, and embracing all facets of wellbeing (Dodge et al. 2012; Felce and Perry 1995), may meet the requirement.

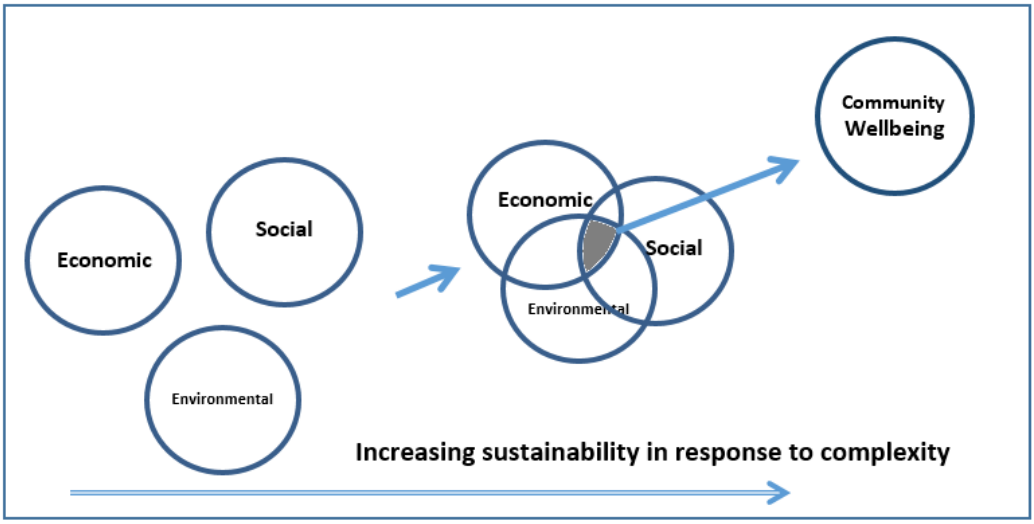

Fig. 3 Integration of social, economic and environmental perspectives into community wellbeing (Adapted from City of Onkaparinga 2000)

Twelve - Month Reflections by Two Communes in Vietnam

Method

Our action research project aims to facilitate adaptive learning in rural communities (the indicators framework itself is an adaptive cycle). So a year after the first field work was undertaken to test the framework, the researchers came back to the communes (Tam Hiep and Vang Quoi Dong communes, Binh Dai District, Ben Tre Province, Vietnam) to seek their reflections on those first workshops and the outcomes emerging from them.

Reflection was facilitated through a one-day workshop and 10 individual semi-structured interviews in each community. Both those who had and had not been the participants of the first workshops were invited to share their perspectives and their insight into how the first workshops had influenced the whole community (not just the participants of those workshops). The reflection process started with a review of what had been done and achieved in the first workshops; it then focussed on what the local people think about the first workshops, how the communities have been using the identified indicators, and how the outputs from the first workshops have continued to be refined, in response to the observations and experience of the community. 'Ownership' of the workshop outputs was again confirmed. The reflection was a chance for the communities to share and discuss their experiences. The lessons learnt from the first workshops were also revisited in the course of the reflection.

All information and "stories" provided by the workshop participants were noted by local research assistants. All the interviews were carried out and carefully noted by the researchers during the interview, with further reflections captured after the interview. Listening to, experiencing and observing the interviewees' stories and emotions are of

special importance in this research. Interviewer observation supplements, enriches, consolidates and confirms the information obtained directly from the participants. Using a narrative approach, all facets of ongoing change in a community's life are revealed by the community's perspective (Squire et al. 2013), and the researchers can gain insight into the way community understand and value (Sandelowski 1991).

The findings, an improved framework, and a set of principles informing the process of identifying systemic indicators for rural communities are presented here, reflecting all the stages of the research project, to this point.

Main findings

A year is too long for follow-up: A year for a second visit and reflection is not appropriate for rural communities in developing countries. It is too long to keep their aspiration "lively". Not one of the participants of the first workshops could recollect the whole process of envisioning, articulating core messages and identifying systemic community indicators. Nevertheless, it was clear that even over a year untended, some fundamentals had taken root. The core and meaningful words such as satisfaction, cooperation, happiness, good neighbourhood, healthy and respect that had been deeply discussed and agreed as values and part of their envisioned community wellbeing, were spoken excitedly out. They remained lively in the community awareness, although "*rice, clothes, money*" were, of course, still of central concern. If researchers were to visit the communities more frequently after the initial workshop (perhaps every two months), they may come to be seen as "insiders" by the communities and may be more effective in helping to keep the shared vision and chosen systemic indicators lively in the daily activities and decision-making of the community.

Top-down 'encouragement' is not helpful: Without reference to the researcher, staff of Binh Dai department and leaders of the communes printed the visions and indicators from the initial workshops, and passed them to the participants a day before the follow-up workshops. This is a kind of top-down way to 'deal with' outsiders. It often happens where projects are funded by governments or managed by non-government organisations, but there is rarely an official record of this 'help'. In practice, it is ineffective, as most of the participants do not read these materials, and even if they are read, there is no guarantee that they will be remembered. "I do not remember much about our vision and indicators as we generated them a long time ago" was what a number of participants said when first asked to talk about these. The follow-up process does not aim to focus on or condemn forgetfulness. The shared visions, indicators and actions of the community can be re-enlivened in a care-free environment, without any pressure.

Qualitative indicators are often able to prompt actions: Some qualitative indicators are able to prompt action, but quantitative indicators seem to have less impact in this respect. For example, the indicator "Parents are aware of their children's study progress, attitude and behavior in school" (identified by Tam Hiep commune) and "Parents' satisfaction of Parent – Teacher Meetings" (identified by both two communes) appear able to stimulate the thinking of parents about what information they need to know about their children and can receive from teachers; what they should do to make Parent – Teacher Meeting effective; and what they should do to support their children at school. This concern and care for children, may seem an obvious focus, but still needs, crucially, to be improved in rural Third World communities. These qualitative indicators are exactly what the

framework for systemic community indicators aims to enable the communities to articulate.

Identifying the indicators on one occasion is not enough to change the habits of community "planning": The communes have not officially used the identified indicators as a backdrop to the formulation of their development plans. One important reason for that is that the development plan usually depends on guidance from the higher level (district/province). And the plan contains only production issues, with other issues addressed by relevant community specialized organisations. Engaging once with the systemic indicators framework does not have a strong impact to change the established mode of planning. Rural communities in developing countries cannot achieve positive planning outcomes if researchers, (or practitioners and developers) come just once (for just research purposes – to test conceptual framework) and leave forever, or for a long time (a year in our case) then return for just one brief opportunity to reflect.

Impact is real, although indisputable evidence is not easy to obtain: Enduring outcomes may not occur in just one year (e.g., GDPRD et al. (2008)) and those that do occur are not easy to delineate and assess, or to elucidate with unambiguous evidence. This is consistent with Innes and Booher (2000) observation that "Their influence came through a more complex and less observable process than even those involved recognised". Nevertheless, the identified lead indicators (often conceived as qualitative) can prompt change, and by using those indicators, the participants at least can feel that their vision is unfolding. For example, more and more Tam Hiep commune's members felt uncomfortable with the waste thrown in the farms and on the roads, and the bad

smell from manure in public areas. Some of them reported to the authority about what and where waste was left, and which households were responsible. It was clear that their action, and the change in behaviour demanded, were prompted by the conviction that the current state of affairs was not consistent with "what they really want" in regard to local environmental protection, – a member of Tam Hiep commune reflected in her in-depth interview that "Identifying the indicators and understanding them will change our awareness and behaviour" –.

Although the "most significant change" technique was not explicitly applied in this fieldwork (Davies and Dart 2003), the qualitative participant assessment that was facilitated during the reflective workshop and interviews has much in common with that technique. Participants were encouraged to identify and discuss the impacts of the initial workshop, twelve months earlier. It may be that a more explicit use of the technique, as one component of the reflection that follows envisioning and indicator identification, would assist participants to evaluate and celebrate the impacts of the systemic community indicators framework, especially where those impacts are not readily quantifiable.

Participation of the most powerful leaders in a community is critical: The engagement of all community members is the focus of the process for identifying indicators, as discussed above. Community leaders play a critical role in facilitating and promoting change. Involving community leaders in the whole process and empowering them is indispensable and central to the model in particular and rural development in general. Only a deputy-head of the communes participated in the first workshops and the reflection is not sufficient. Their voices do not carry as much weight as heads of communes and secretaries of the party, and those who

have the strongest power in the communes, who must be brought together with all the other people involved in the process. This does not mean that the leaders have the right to decide the commune's vision, indicators and actions independent of the other participants. But by participating in the process they not only come to know and feel how the process works and the benefits it can provide, but they also have a broad understanding of the thinking, wishes and priorities of community members. They have a special insight into the community as a whole and are respected and trusted by the people in their communes, and vice versa.

As true participation of all members of the communities is the key of the framework, attention has been paid to this throughout the whole process. Even though the workshops' participants included leaders and representatives of all levels of wealth in the community, all voices have been treated equally and included in the processes and their outputs. The participatory techniques and methods, such as small group discussions, brain storming, independent thinking and writing on cards, speaking in turn, and being overt of all ideas were effective in reducing dominance and encouraging vulnerable individuals to participate in the workshops. Although the envisioning process, in particular, has an innate capacity to negate power differentials, it is still possible for habitual, power-based relationships to intrude on these processes, and the facilitators must remain vigilant so that any early signs of this can be corrected, without loss of face.

More participation at the small group level may be valuable: This cycle may be better undertaken in every village, before gathering and synthesizing all the village visions, indicators and actions at the commune level. There are several reasons for this: (1) The scope of a rural commune is too large for every member to join in a

workshop, but workshops at the village or sub-village level (around 20-40 households) would be an effective means by which to involve as many individuals (or household representatives) as possible in the whole process. “Everyone should participate and contribute. That is much better than that the representatives do it and the propagandize (as often happens)” – was the view of many of the participants; (2) Villages do not have to build an official plan to submit to a higher administrative level, but they can create an integrated vision for themselves, including every facet of their lives; (3) In a village, everyone knows each other, and is likely to be open when sharing and learning, so that interactions are richer and their impacts quicker; (4) Undertaking the process at the village level would influence and empower action at the communal level because leaders of communes and specialized commune staff are also members of villages; and (5) Although the commune have to have an official production plan to submit to the district authorities, it can also make an integrated development plan of its own. And whether the visions, indicators, plans of the villages and communes’ are officially recognized or not, the process can shape decisions and activity directed to communal development just as a result of participation in the process.

Paying community participants may be counterproductive: Although most of the participants said “it is not difficult to undertake the process of identifying systemic community indicators”, it was, in fact, hard work (for both researchers/facilitators and members) to make their way through the process to a fruitful outcome. The allowance paid to community members for participation might be one of the main reasons for the positive assessment. This is the way many rural development programs and projects have been approached, in order to involve local people. It creates the habit of expecting a subsidy from outside. Obtaining the genuine

engagement of rural communities is still a challenge, and as with all such adaptive work (Heifetz et al. 2009), holding a space in which change can emerge requires time and committed practitioners. The role of external supporters (researchers/facilitators) is to shape an experience that engages participants at the level of their intrinsic motivation – that is, how an activity meets their inner needs, rather than using 'extrinsic motivation' to engage. 'Bribing' participants is likely to generate a range of perverse outcomes, chief amongst which is the diminishing of their intrinsic motivation (Kohn 1993).

The process builds human and social capital: It was clear that this cycle directly built "intermediate ends" - human and social capital in community (Meadows 1998). It created a platform for uniting the community members through a 'sense of community' with 'neighbourhood cohesion', and "the belief that one's needs are capable of being met within the community and a sense of belonging or mattering to the community" (Boyd et al. 2008). That, in turn, can lead to "ultimate ends" – community wellbeing.

Revisiting increases the community's knowledge and awareness: Although the identified indicators had not yet explicitly been used to inform the communes' plans and actions, or the measurement of community development, the process of reflection itself increased the knowledge and raised the awareness of the workshop participants. To begin with, no one in the follow-up workshops could remember the indicators from the first workshops or details of their other outputs. But by the end of the reflective activities, they understood their indicators clearly – as one of the participants put it, "they serve both orientation and monitoring" and another

"now we are clearer about what are important for us based on the vision and indicators".

In addition, the revisiting was a chance for them to remember and speak out their co-created vision. They did that excitedly, even though they did not remember all the details of their shared story or all the core messages they had identified. It is a powerful indication that they continue to think about and be gripped by *what they really want* – the spring-board for their self-respect and self-organisation towards sustainable development. Robert Fritz, cited in Senge (2006) "It's not what the vision is, it's what the vision does".

Moreover, they conversed enthusiastically, and actively approached the wall where their co-created visions and identified indicators were hanging. Some of them stayed after the workshop had formally finished and continued to discuss the indicators. They compared the similarity and differences between their identified indicators and the "Cultural village" criteria (issued by the authorities at the provincial level). That was a very good chance to understand the importance of 'lead indicators', which communicate what is unfolding, not what has already happened.

After the follow-up workshops, they were in a position to share with and learn from other community members (both the participants and non-participants) and be alert to feedback that could form the basis of further reflection and a new round of actions or experiments.

Improved Framework

Based on the findings and lessons learnt from the initial workshops and the 12-month follow up, the original framework for identifying systemic indicators for rural communities in developing countries has been modified (Figure 4). Starting with co-creating a shared vision (step 1), then teasing out core messages (step 2), the framework can facilitate strategic action, prompted directly by the core messages (step 3), while also identifying indicators (step 3a), and ranking influential indicators (step 3b). That means experiments could be based directly on core messages, and high leverage indicators, based on core values, may also influence actions naturally. But the indicators should be continually revisited and reappraised in the light of their primary role, that is to help monitor whether actions are actually bringing the shared vision into being.

Figure 4 also represents the separation of step 5 (in the original framework) into 3 steps (Identifying actions/experiments, Experimentation and Reflection), in order to reflect more faithfully the experience on the ground during the research. After determining actions/experiments (step 3) and categorising influential indicators (step 3b), the communities will undertake experiments with or without support from outsiders (step 4). The reflection should be critically conducted after the experimentation to assess how the actions and indicators have worked towards bringing the vision into being, as well as whether the vision itself needs refining (step 5). The process continues with the next cycle of experiment and learning, responding to what emerges in practice and reflecting the lessons learnt.

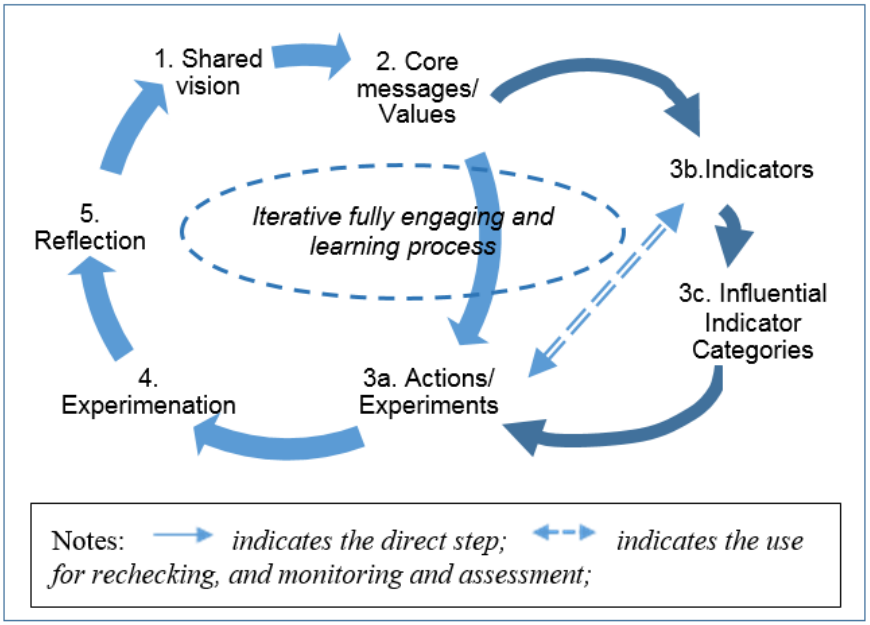

Fig. 4 Revised systemic community indicators framework for rural communities (Modified from Nguyen and Wells 2018).

Principles Underpinning the Process of Identifying Systemic Indicators for Rural Communities

In practice, rural communities in developing countries still need support from outside the community. The systemic community indicators framework, however, does not encourage communities to ask for assistance from outsiders (governments or non-government organisations) or comply passively with whatever outsiders 'guide' them to do. It seeks to assist practitioners/developers (or ideally the communities themselves) in facilitating processes by which rural communities can ask questions, understand more about themselves through building their shared vision, identify compelling indicators of progress and decide on collective actions, rather than being asked or provoked by paid outsiders. The following principles are proposed as a foundation for the effective application of the systemic community indicators framework.

The focus should be on communities as a whole, respecting and harnessing the nature of complexity. As mentioned, isolated parts (a problem, stakeholder or sector) of a community system cannot be effectively addressed in separation, as the community's parts are interconnected and interdependent, and collectively shape community values, health and vitality. The systemic indicators process seeks to facilitate communities working holistically. Communities and practitioners should think of community actions as experiments and be prepared to work with emergent phenomena and uncontrollable changes. The process functions as an iterative and adaptive learning cycle to enable the communities to have such ability.

Practitioners/researchers/facilitators should imbed themselves, as far as possible, in the community. Working *on* the community as expert outsiders has proved largely ineffective. Working *in* the community as trusted facilitators has a better chance of engaging community members and securing their participation. Outsiders making short visits to undertake 'field work' will more likely struggle to gain the community's trust, real engagement and commitment. That inability to connect with the community will, in turn, render the outsiders less effective in helping community members to articulate their vision and set about bringing it into being.

Empowering people and communities, and building a sense of ownership. While practitioners should aspire to establish themselves as 'insiders', they cannot replace real insiders. To achieve the community's version of sustainable development, community capacity and capability must be built throughout the process, especially in the first envisioning cycle, so that community members can undertake the subsequent cycles more and more independently and make

whatever decisions they think will reflect the core values of their community. Only if they have the opportunity and the capacity to decide, own and use what belongs to them, will development and resilience be cultivated, both at the individual and collective levels.

Ensuring genuine community participation and ownership. Cobb and Rixford (1998) argue that "a democratic indicators program requires more than good public participation processes". That is especially true for the creation of systemic community indicators. Practitioners and communities should involve as many community members as possible, and hold as many workshops as required to create a truly shared vision, collective indicators and agreed actions, all of which reflect what the members care about most, as expressed in their values-rich stories. That kind of process generates a feeling of "belonging" for all community members, which leads in turn to an authentic sense of community ownership.

Keeping the framework and language as simple and 'local' as possible. The framework cannot be effective if it is described and presented in a complicated manner, using language that is confusing or inaccessible for a particular community. Framing the process in a way that makes sense in the local community context plays an important role in achieving useful outcomes.

Paying an allowance to get people involved may be counterproductive. It goes without saying that rural communities in developing countries often need financial support, but paying community members for participating in a project that seeks to improve their lives and community life, will not build a culture of ownership. This practice may cultivate the counterproductive habit of 'participating' in a project simply because they are paid to do so, not because they see value for the

community in the project itself. The organizational behavior literature is replete with accounts of research in motivation confirming that attempts to 'motivate' behavior using rewards and punishment, 'sticks and carrots', may produce short-term, superficial compliance, but no enduring shift in underlying attitude or commitment (e.g., Kohn (1993)). In fact, the very application of an extrinsic, 'do this and you'll get that' approach, tends to *undermine* the intrinsic motivation associated with the task involved. The practice of paying for attendance may well have contributed to the failure of previous initiatives to make a lasting contribution to sustainable development.

Pay attention to the process and do not rush to produce outputs. Indicators are important, as "results are impossible without proper indicators. And proper indicators, in themselves, can produce results" (Meadows 1998). But benefits can emerge throughout the process, not just via final outputs. In other words, *outcomes* are every bit as important as *outputs*. Learning, agreement, a sense of shared purpose, mutual accountability and shared responsibility are products of thinking, discussing and sharing in community. Such valuable factors cannot be achieved if we focus too much on outputs and rush to produce them in a short time. Moreover, the quality of indicators depends on how profound the process is (that is, on how well the community understands and engage in the whole process, how well they build their values rich stories together, make sense of their indicators and use them *over time*). It is not easy to produce outstanding indicators –"the development of an influential indicator take time" (Innes and Booher 2000).

Having many indicators does not necessarily mean that they are good indicators. The quantity of indicators identified is not as important as their quality. A good

indicator may even prompt transformational change but identifying many indicators does not improve the odds of achieving such an outcome. Nevertheless, the community may still need more than a few indicators in order to explore all facets of its wellbeing.

The community must 'make sense' of every indicator. Communities need a number of indicators to reflect their wellbeing, but the indicators only become effective when they are meaningful for and understood by the community. Otherwise, the indicators may lead the community astray. If the community acts without understanding, the capacity (propensity, even) of complex systems to produce perverse outcomes is more likely to assert itself.

There is no need for indicators to be 'perfect' as judged by the experts/outsiders; it is better to let the community indicators stand in the form that is familiar to the community and makes sense to it. As the proverb goes, we should not let the perfect become the enemy of the good. Community indicators are used by and for the community, and they cannot be influential and/or monitor effectively if they look 'strange' to the community (e.g. expressed in specialist jargon that may unintentionally mislead). As with all initiatives in a complex environment, the aim is not to get the indicators 'correct', but to start with indicators that seem to make sense, and then to refine (or change) them over time, in the light of experience and reflection.

Do not ignore or underestimate a 'little' and/or 'obvious' indicator, as it sometimes leads to powerful outcomes. "Little things that mean a lot" is the ideal indicator, and that notion seems to get traction in these communities. Many 'little' things that may look 'obvious' to people in developed countries (for example, the idea

that children have a right to refuse food they do not want) are not as quickly and easily recognized or expressed in some developing countries like Vietnam. But there is high leverage associated with actions prompted by or reflected in such an indicator.

Seeking and using right indicators, and interpreting their information into actions. Actions can be prompted by core messages and influential indicators. But it may be preferable for indicators to retain their central role, monitoring the trends of community activity, and in that way informing the decisions made about future actions. Those indicators should be wisely chosen, as using superficial or ill-considered quantitative indicators that could be favored simply because the data is accessible, may not only fail to capture a holistic, integrated perspective on community well-being and sustainable development, but might also prompt actions that deliver perverse or destructive outcomes. Besides, the community's actions may need, and attract, implementation support (technical, financial, and/or informational) from outside, so it is critical that the community should be clear about what it aspires to. Systemic indicators, emerging from and reflecting a shared vision and shared values, help to ensure that energy and other resources are directed to what the community really wants, not just what it will settle for.

Conclusion

Establishing an effective systemic community indicators framework for rural areas, where the challenges are especially characterised by the uncertainty and complexity that lie at the heart of living systems, has never been easy. It requires that we identify indicators that are holistic and practical, simple, and able to reflect community wellbeing and facilitate community decisions towards sustainable outcomes.

The process proposed here for identifying systemic rural community indicators reflects the nature of living systems, and hence does not encourage rushing in to find "quick solutions" for each problem. It studies the whole system and first seeks to "listen to the wisdom of the system" (Meadows 2002) to honour what is already present and to find the right places to intervene for greatest effectiveness. The process is a possible pathway by which communities can learn continually about their system and reflect on which actions will be most effective in pursuit of their shared vision. The phases of the cycle leading up to decision making – envisioning, extracting core messages and identifying community indicators – contribute to determining wise action. The identification of powerful, leveraged indicators (little things that mean a lot) enhances a community's understanding of which actions can best contribute to bringing their envisioned future into being.

A set of principles for applying the framework for systemic community indicators in rural settings in developing countries are documented in this paper, based on findings from follow up action research in two communes in Vietnam. These principles are intended to contribute to filling the current gap in the understanding of community indicators for rural communities, by framing the communities as adaptive learning systems. This holistic and practical framework provides a potential pathway for sustainable rural development, but could also find application in organisational and urban communities.

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Chapter 5

SYNTHESIS AND CONCLUSIONS

5.1 Summary of Conclusions

Community indicators have been recognised as a valuable tool in community development. Information they provide through measuring, observing and feeling in the monitoring process, is a foundation for decision making. Community indicators highlight integration and a collective sense of ownership. Community indicators represent a reflection of community wellbeing, and a means by which the community can hold itself accountable for pursuing wellbeing.

By employing an abductive action participatory research process, this study has been carried out in three stages of a cycle – conceptual framing, empirical field work and critical reflection. This process enables the researchers to validate the proposed framework both theoretically and practically.

While there have been numerous attempts to build indicators in urban areas, this study is a response to the gap in our knowledge of community indicators in rural areas, particular in developing countries. Rural communities, where agriculture, including forestry, plays a crucial role in food security and environmental protection, need to deal with poverty and other complex challenges in their sustainable development. The paucity of practical research in this area constrains the scholars who are trying to understand what it means to work effectively in rural areas, and constrains rural communities, themselves, in identifying and using their indicators for community development towards sustainability (Nguyen and Wells, 2018).

This study is underpinned by a systemic approach, which helps to see the whole system, not just its individual parts. This holistic approach is especially important for scholars engaging with the complexity of 'living', socio-ecological systems, which feature intricate interrelationships and interdependencies in human culture, the natural ecology and the economy (Bosch et al., 2015). As a living system, a community is characterized by interconnectedness and interdependence amongst parts and functions. Community indicators, must take a whole-of system approach that can overcome the limitations of reductionism (Morton and Edwards, 2013) and reflect the integration of the many different –elements at the heart of community wellbeing.

This study also highlights the under-valuing of genuine community participation. Community participation, building a sense of community ownership and accountability, is central to the creation of community indicators (Leeuwis, 2000; Mathbor, 2008), which also reflect community wellbeing (White and Pettit, 2004). Participation has, however, become equated with "awareness" (Sirgy et al., 2013) and the community continues to participate as an "invited" stakeholder (Cornwall, 2008; Eversole, 2010). It requires, instead, a mechanism that can enable the community to develop its own indicators and projects, and the opportunity for all its members to engage fully, to ensure that they benefit from and are responsible for the outcomes.

The *participatory systems-based framework for identifying indicators for rural communities in developing countries* (hereafter *systemic community indicators framework (SCIF)*) fills the research gap and aims to assist in achieving sustainable community development in a rural setting. SCIF is an adaptive combination of the *One Way Forward* model (Wells and McLean, 2013), designed for transformational change in organisations, and an application of *leverage points* (Meadows, 1999) that reflect

points in a system where a relatively small intervention can produce a large shift in system behaviour. SCIF is an iterative sharing and co-learning engagement process for identifying influential indicators and nourishing the community's self-development. This systems-based participatory action research model encompasses five-steps, starting with co-creating a shared vision, teasing out core messages/values, then identifying and ranking indicators, and determining experimental actions. It was well accepted by and operated effectively in both communes (research sites in Vietnam). This framework answers the first research question and addresses the first objective "*How can a systemic approach be used to identify effective community indicators for rural communities in developing countries?*" that underpins this research (Chapter 2 presents original framework and Chapter 4 presents the improvement).

SCIF facilitates the uniting of all community members to listen, share, decide and experience together, through the steps of envisioning to create shared vision, extracting core messages from the shared vision, and identifying influential indicators based on the core message and different levels of leverage points. Strategic actions, after that, are based on core messages, with an eye on influential indicators. Both indicators and actions are treated as experiments to be tried, with outcomes observed (as feedback of the system), reflected on and refined, in a continuous cycle of development.

SCIF seeks to establish a community's ultimate goal through an envisioning process (step 1 of SCIF). The goal is expressed by a shared vision that is values-rich, bringing together stories of all the community's members about how they really want to experience the future together. Although the community vision is a story that seeks to capture the ideal, reflecting all community members' concerns and action settings (Ziegler, 1991) it, is also (as with SCIF more generally) set within boundaries that respect such factors as

community context and history (van der Helm, 2009) and what we know about how the world works. The goal, therefore, reflects the community's values, priorities and challenges, such as sustainable agricultural production, neighbourhood based on mutual support, remaining active, maintaining good health, alleviating isolation and deprivation, and as the other focuses of rural community wellbeing. That would ensure that the vision is appropriate and responsible – that it is both aspirational and reflects what we know about the way the world works (Meadows, 2014). The shared visions of both communities (research sites in Vietnam) capture these considerations.

SCIF supports sustainable rural community development by facilitating active engagement and focussing on ultimate ends and wellbeing, engagement in every stage of the process, and experimentation with outputs. SCIF enables a community to change from the "inside" with their intrinsic motivations reflected in their responsible shared vision and strengthened by genuine participation. The community experiments with what it thinks will bring its desired goals into being, and it monitors the progress of development by reference to indicators it values, and not playing a "game" designed by experts (with or without the community consultancy). The process is informed by, as well as builds, a sense of self-respect, self-control, capability, ownership and accountability, all of which contribute to sustainable development (Cavaye, 2001; Nguyen and Wells, 2018).

SCIF focuses on "lead indicators" rather than on those that only measure what has already happened – "lag indicators". It looks forward, rather than trying to steer by looking in the rear vision mirror. By answering questions about whether its decisions/actions/experiments are moving in the right direction to bring its shared vision into being, communities can track the progress of their development. Both qualitative and quantitative indicators are identified by this process, but it is in the nature of wellbeing

that many indicators tend to be qualitative and subjective. They may not be measureable, but the community can feel and observe (Nguyen et al., 2018). Importantly, by focusing on "leverage points", this framework enables rural communities to identify indicators that operate at the most powerful points of intervention in the system, and can both monitor and prompt a community's efforts to achieve transformational change. Such indicators have been identified in both communities (Objective 2, presented in detail in Chapter 3).

Not rushing in to solve problems with "quick solutions", system thinkers first "listen to the wisdom of the system" (Meadows, 2002) to honour what is already present in the system and to find the right places to intervene for greatest effectiveness. SCIF is a possible pathway by which communities can learn continually about their system and reflect on which actions will be most effective in pursuit of their shared vision. Every phase of the cycle (envisioning, extracting core messages and identifying community indicators) contributes to determining wise action. The identification of powerful, leveraged indicators (little things that have large impacts) enhances a community's understanding of which actions can best contribute to bringing their envisioned future into being.

The community indicators reflect shared vision and both personal and community (social) wellbeing. No matter how an individual wants to experience the future, the kind of discussions that SCIF enables creates excitement and interaction amongst community members, and integrates the *feelings* of every member in a community shared vision.

The framework is not supposed to produce a fixed "formula" or template – it reflects the uncertainty of a complex world and the emergent nature of change. Its success depends on the determination and adaptive work of both practitioners and communities. A number of practical lessons from the field regarding methods/tools, skills and language, along

with a set of principles, are proposed. Their origins can be found in all stages of the study (Chapter 3 and 4). They represent the foundation for the fruitful application of SCIF in rural communities in developing countries, and they address the second research question (and Objective 3): *What are the principles for the identification of rural community indicators?*

Sustainable community development is a complex process (Hjorth and Madani, 2014) emerging from experimental action. The identification of community indicators can be seen as a means to the end of community wellbeing, but its importance lies not only in the indicators themselves, but also, importantly, in the process that encourages the people to learn and share continuously and to decide together in the present, in pursuit of a future goal. Importantly, sustainable development enables organisations and communities to proceed along the pathways that promote the progress of self-sustaining social-ecological dynamics for stability (Baker, 2007; Cobbinah et al., 2015).

5.2 Research Contribution

The outcomes of this research project include informing and developing new conceptual and practical framework for complex rural development in general and the identification of community indicators in particular, especially in developing countries where communities do not have the capacity to use sophisticated systems methodologies and modelling. Without the genuine engagement of all community members (most likely facilitated by 'outside' experts) in sharing values and vision and learning from each other's practical knowledge and experience, it is very difficult to develop and sustain self-motivation, continued involvement and a sense of ownership, and farmers and communities may remain passive beneficiaries, leading to continued development failures and unsustainability. The systems-based framework for rural community

indicators identification is designed to have a direct influence on the progress of rural communities towards sustainability and wellbeing. It might also help to encourage national/provincial/district policy makers to make systemically based management decisions – why and where to use interventions that will meet the real priorities of communities.

The study contributes in both theory and practice. The theoretical contribution stems from combining the complexity-based *One Way Forward* model, which was developed for transformational changes towards organisational sustainability, with an understanding of different types of leverage point and their level of influence on the whole system. The contribution to the practical application of this theoretical model, recognises the special circumstances of rural communities in developing countries and the challenge of shaping processes that enable all community members to become actively involved, to understand and to have insights into their whole community while determining influential indicators of progress - an area that has not been recognised by existing literature.

This research has direct and positive impacts on rural development in the region where the research is being conducted (the two communes of Binh Dai district and Ben Tre province, Vietnam). The principles that emerge and the lessons learned in the field will be of value to developing countries in general. Improving the genuine participation of all smallholder farmers in the whole process of identifying community indicators should increase their self-esteem and -development, hence improving the sustainable quality of rural life – one of the most important goals of rural development.

5.4 Practical Implications

This proposed framework chooses to start with systems of interest – that is a community or an organisation people care about and would like to improve. The systems may contain surface problems, but what we see is just the visible part of the iceberg. Unseen parts are probably more important and are the source of the superficial problems. And these less tangible, less obvious layers are complex, with interrelationships and interdependencies that ensure that individual parts cannot be separated and addressed in isolation. That SCIF seeks to study communities as a whole and to assist them to experiment, to learn, and to develop continuously.

It is clear that systems change over time. The changes emerge from the functional interactions amongst components within a system and from interactions with the system's environment as well. A healthy system has the ability to improve itself and adapt to the impacts of the environment. To do that, it needs timely and accurate information - feedback. A community, as a system, needs its indicators as a foundation for learning and development.

SCIF aims to identify indicators that can inform a community's decision making. The indicators are developed, owned and used by the community. They fit the community in terms of its shared vision, culture and language and can also adapt to the bigger systems in which the community sits (that is, the regulatory and natural eco-systems). The decisions made by the community, in the light of its shared vision and systemic indicators can progressively bring into being what the community really wants, and what it stands for according to its shared values.

For rural communities (communes or villages), envisioning (step 1 of SCIF) is a chance for them to think, share and co-create their desired future. It seems they individually often think about their own physical/tangible problems such as lack of rice, money or travel means, but less often about issues that reflect the whole of their community. Envisioning is the time for them to think and feel beyond each household's demands and consider the harmony and integration that builds a sense of collective wellbeing. SCIF enables community members to articulate shared values and to cultivate the interdependence of all members, building the desire to collaborate. In addition, a shared vision "uplifts people's aspiration" (Senge, 2006, p. 193) – SCIF chooses envisioning as a means to orientate the people towards progress and solutions, instead of focusing on problems. That opens the door to self-development.

The question "How to more effectively translate knowledge and commitment into action" asked by Besleme et al. (1999), is still a concern. Innes and Booher (2000) also assumed community indicator projects typically did not present strategies for developing and linking actions. SCIF addresses this issue by focussing on *lead* indicators that not only capture the core messages or values present in the shared vision, but also reflect unfolding outcomes, so that the community can decide on actions that keep it on the desired path. SCIF also seeks influential indicators that, while they may not dictate particular actions, keep what is most important at front of mind, where it can influence decisions and prompt actions. The focus on a cycle of experimental action and learning, rather than a rigid, linear path of 'planned' outcomes, also makes it easier to maintain the momentum of action – it removes the need to have 'right answers' before acting, and celebrates 'error' as an opportunity to reflect, learn, and refine actions, rather than avoiding it as a fatal flaw.

By encouraging as many community members as possible to participate in the whole process, SCIF benefits the community simply through implementing the process, irrespective of the actions decided on. It enables community members to understand each other on a deeper level, and to strengthen their relationships and trust via collaboration around basic values and deeply held desires.

5.5 Limitations to Consider in Future Research

SCIF exhibits many advantages for dealing with the complexity of 'living' systems, while assisting rural communities to build self-respect and develop towards sustainability. There are, however, some lessons from the field that should be considered in future research, and some particular challenges that present when applying SCIF.

SCIF seeks to identify powerful indicators, which can, themselves, influence the behaviour of communities, and help to shape a path towards bringing a shared vision into being, but it is relatively hard for rural communities, unaided, to rank identified indicators. That task requires a basic understanding of systems concepts and, in particular, leverage points. Although, SCIF aims to build the people's capacity and capability during operation of the process, particularly in the first cycle, it is clear that further research is required on how to make the process of identifying influential indicators easier and more accessible for rural communities.

Participation in this process by community members is "adaptive work" (Heifetz et al., 2009). It is natural for participants to seek to avoid the uncertainties and ambiguities of that work and to be drawn towards the shorter-term, more 'technical' problems, which hold out the promise of a 'quick fix', even though they cannot address the messier, systemic issues that lie at the heart of long-term community well-being. Future research

should focus on the best means by which to "hold the space" for this adaptive work (Heifetz et al., 2009), so that the big, systemic opportunities for sustainable development are not passed over in pursuit of more 'comfortable' and, on the face of it, more tangible goals. This issue is a challenge for rural communities, especially poor communities, as their poverty and other deprivations naturally lead them towards giving priority to physical, short-term 'benefits'.

In addition, the expressions of community wellbeing – the ultimate goal of a community and the focus of SCIF – are unlikely to be recognised clearly and quickly, and the evidence that supports a link with wellbeing is rarely tangible and indisputable. Innes and Booher (2000, p. 174) argued that their influence "came through a more complex and less observable process than even those involved recognised". That is why SCIF focuses on lead indicators (often conceived as qualitative) – by using those indicators, the participants can at least sense whether their values-rich vision is unfolding. Ideally, SCIF is used by and for communities as they do and feel. It is not there to 'prove' the dynamics of sustainable development, but to nurture them.

The success of the proposed framework depends partly on the knowledge, skills, flexibility, and commitment of the people who are facilitating it. Our fieldwork suggests that the process would benefit greatly if community leaders were trained to facilitate the identification and articulating of community indicators. They should be the principal facilitators, as no one from outside can understand their community as well as they do. They know best how to deal with issues relating to process (such as language and sequence) so as to achieve the desired process outputs and outcomes. They may still need assistance from outsiders (e.g., researchers, developers or extension staff), but they should be active owners of the process.

Due to limitations of time and resource, not all the members of the communities (research sites) could be involved in this research, and the researcher was able to visit the communities just twice (the first time for testing the framework and the second for participant reflection after about 12 months). There was insufficient time for all community members to absorb the "soul" of SCIF, and for the researcher to become established as an 'insider'. These constraints may have limited the potential impact of the framework. Nevertheless, the findings of our fieldwork did demonstrate the effectiveness of SCIF in helping participants to identify community indicators, think in terms of the wellbeing of the whole, orientate community decisions and actions towards that wellbeing, and unite community members in pursuit of what they really want, not what they will settle for. For many, this was a significant piece of adaptive work, an exciting but unsettling shift in how they think and feel. The beginning of its value to community life was apparent even after twelve months, but we expect that value to play out at a much greater community depth and breadth in the longer term. Further research will be required to assess that impact.

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