

Comparing Sustainable Rural Well-being in United States and United Kingdom Contexts

George R. Smith, Glenn Strachan and David Gibbon

- *Smith, G. Tennessee State University in Nashville Tennessee, United States,*
- *Strachan, G. London South Bank University, United Kingdom.*
- *Gibbon, D. Agricultural and Rural Livelihood Systems, Shropshire, United Kingdom*

Abstract

This paper proposes that a baseline analytical framework approach is a necessary starting position and point of reference for developing default customized indicators of sustainable agriculture and rural well-being. Rural well-being addresses multiple issues including social/cultural, economic, and environmental contexts. Sustainable Agriculture practices are increasing as Industrial Agriculture becomes less acceptable. Rural women, minorities, and elderly have been the most significantly impacted by these changes. The United States (US) and the United Kingdom (UK) have taken positions on these transformative rural issues discussed herein. For these reasons we propose a set of fundamental indicators of rural well-being in the context of evolving agriculture and rural communities sustainability.

We will also discuss a sampling of evolving models of exemplar sustainable agriculture and rural community partnerships from the United States and the United Kingdom. The United States Department of Agriculture is “committed to helping improve the economy and quality of life in rural America” primarily through loans and subsidies (USDA, 2015). The Sustainable Agriculture Research and Education (SARE) organization is dedicated to supporting sustainable agriculture and sustainable rural communities. The SARE Vision is “an enduring American agriculture of the highest quality that is profitable, protects the nation's land and water and is a force for a rewarding way of life for farmers and ranchers whose quality products and operations sustain their communities and society”. (SARE, 2016). The United Kingdom government and non-government agencies have taken a more holistic approach to rural well-being in their efforts to achieve a more balanced social-economic-environmental state of rural well-being. The UK interpretation of Community Supported Agriculture (CSA) is a tested example of this sustainable approach to fostering rural well-being (Saltmarsh et. al., 2011).

To conclude, common generic indicators will be identified in selected models from the US and UK contexts, which can potentially produce positive impacts, supportive of sustainable agriculture, rural community resilience, and rural well-being.

Keywords: indicators, rural well-being, sustainable agriculture, resilience, United Kingdom, United States.

I. Introduction

This paper compares and contrasts approaches to models of rural well-being in the United Kingdom and United States. Issues including social/cultural norms, economics and environment will be addressed. Sustainability indicators of rural well-being will be drawn and substantiated from this review and dialogue.

Rural well-being is impacted by location and is gender-specific. We define well-being in this paper as achieving a sustainable balance of social, economic, and environmental resilience. Contextually speaking the United Kingdom (UK) and United States (US) geographic contexts include a diverse range of terrains and climate including coastal landscapes, rolling hills, forests, rocky uplands, and mountains. Rural well-being is significantly impacted by location. Proximity of rural locations to urban areas has a strong positive or negative influence on degree of well-being on rural areas of the UK and US. For example, urban development is fuelled by increases in population. Population increase often requires urban development and expansion out into rural areas (Smith, 2015).

The spread of urban growth out into rural areas significantly impacts women, individuals and families, and minorities living below poverty level, for example, due to increased employment opportunities on the one hand, and increased costs of living on the other. Rural locations typically bear the brunt of social/economic impacts due to economic fluctuation. In comparison, urban areas are generally more resilient and less negatively impacted by economic fluctuations (USDA 2015). Rural women, minorities, and elderly are the most significant sector of the population impacted by these issues. Local and regional environmental factors range from seasonal weather, snow and rainfall, drought, to soil contamination, deforestation and flooding. Statistics show that women, minorities, and elderly rural dwellers are especially impacted by these natural occurrences (UN Inter-Agency Task Force on Rural Women, 2012).

II. Historical perspective on the agri-environment schemes in the US:

In the early 20th Century agriculture in the US was beginning to transform from small rural farms to Industrial Agriculture. In the early 1920s, farmers saw several opportunities for increasing their production. New technology and crop varieties were reducing the time and costs-per-acre of farming, which provided a great incentive for agricultural expansion. This expansion was also necessary to pay for expensive, newly

developed equipment (such as listers and ploughs) that was often purchased on credit, and to offset low crop prices after World War I (National Drought Mitigation Centre, 2016).

In October 1929 the stock market collapsed leaving farmers with significant debt and fewer buyers of the products of their hard labour. Following the 1929 stock market crash the Great Depression began in 1930 and continued through the decade until shortly before World War II. During the 1930s The Dust Bowl covered the entire west and mid-western Plains. “The Dust Bowl drought of the 1930s was one of the worst environmental disasters of the Twentieth Century anywhere in the world. Three million people left their farms on the Great Plains during the drought and half a million migrated to other states, almost all to the West (Cook et al, 2009). The Dust Bowl was caused by deficient rainfall, high temperatures, high winds in combination with the predominant farming system. Additional insect infestations and dust storms further complicated this crisis. “The agriculture depression contributed to the Great Depression’s bank closures, business losses, increased unemployment, and other physical and emotional hardships (National Drought Mitigation Centre, 2016).

During the 1930s decade the combined occurrences of the 1929 stock market crash, the Great Recession, and the Dust Bowl had significant impacts on rural well-being and rural communities across the United States. Rural communities played a key role in supporting agriculture in the 1930s, and continue to supporting sustainable agriculture in the 21st Century. For example, rural communities provide local services including venues for sale of agriculture products. Rural communities are impacted strongly by environment and by agricultural productivity, be it positively or negatively.

During the Great Depression and The Dust Bowl many once thriving rural communities were lost forever. During the 1930s catastrophic environmental damage occurred, large numbers of farmers and their families had to sell their farms at historically low prices, resulting in homelessness for many. The devastating impacts of these events were felt throughout the country. A significant number of rural communities struggled through and survived the 1930s era, and are still resilient in the 21st Century. These communities currently play a key role in supporting sustainable agriculture. For example, rural communities provide local services including venues for sale of agriculture products. Rural communities are impacted by agriculture, be it positively or negatively.

The agri-environmental movement in the US commenced with the Agricultural Adjustment Act of 1933 and the Soils Conservation Act of 1935. In the US the first Farm Bill, the 1933 Agricultural Adjustment Act (PL 73-10), addressed environmental issues of significant relevance to agriculture in America during the Great Depression. Two years after the 1933 Agricultural Adjustment Act was implemented the Federal Government also passed the Soil Conservation Act of 1935 (PL 74-46), which established the Soil Conservation Service and made funding available for farmers who

embraced soil conservation practices. “(Cain, Zachery, and Stephen Lovejoy, 2004). The legacy of these two Agriculture Acts lives on today as the foundational principles of agri-environmental farming.

III. Agri-Environment Schemes In The UK:

Since the late 1980s within Europe it has been recognized that support for a production-oriented agriculture is insufficient to maintain biodiversity and rural well being in many areas. Consequently, there has been growing support for measures that encourage the maintenance of a resilient and bio-diverse environment, which will maintain ecosystem services. These measures are applied on a voluntary basis by farmers who wish to enhance biodiversity on their farm and contribute to wider societal wishes for positive environmental enhancement that could be achieved through farming and rural development.

The measures include: intensification of farming, low intensity grazing systems, integrated systems management and organic farming, preservation of hedgerows, ditches and woodlands and conservation of high value habitats and their associated biodiversity. The application of these measures can lead to very significant benefits to the environment and to sustainable rural livelihoods. (see, Pagella et. al., 2013) Agri-environmental schemes have been applied with a considerable degree of variation and flexibility within different EU countries. The UK is no exception, with significant variations occurring between England, Scotland, Wales and Northern Ireland. However, there has been little formal monitoring and evaluation of the effectiveness of agri-environmental schemes until recently (Dwyer, J., et. al., 2005). This review anticipated the increasing importance of agri-environmental measures as part of the revised CAP reforms between 2014-20 that are discussed below.

IV. Indicators For Sustainable Agriculture And Sustainable Rural Livelihoods

In the US the term “sustainable agriculture” is broadly defined. There is significant evidence of sustainable agriculture practices (also referred to as ‘alternative agriculture’) dating back to the mid-19th century. There are many variations and permutations of sustainable agriculture. Many of these ‘sustainable’ agriculture approaches exhibit similar common principles and practices that can provide indicators of sustainable agriculture and rural livelihoods. The United States National Sustainable Agriculture

Coalition states that sustainable agriculture “as legally defined in U.S. Code Title 7, Section 3103 refers to an integrated system of plant and animal production practices having a site-specific application that will over the long term satisfy human food and fibre needs”. These-site specific applications include:

- Enhancing environmental quality and the natural resource base upon which the agricultural economy depends.
- Making the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls.
- Sustaining the economic viability of farm operations.
- Enhancing the quality of life for farmers and rural community societies as a whole.

(National Sustainable Agriculture Coalition, 2016.)

The basic goals of sustainable agriculture as practiced in the United States include achieving and sustaining environmental health, economic profitability, and social and economic equity (sometimes referred to as the “three legs” of the sustainability “stool”). Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance. Stewardship involves taking care of the land, supporting sustainable economies, and preserving/enhancing natural resources, community resilience, and environment health.

Another characteristic of agricultural sustainability is the systems approach, which in its broadest sense is based on establishing direct, seamless connections from local farms to rural communities in a manner respectful of surrounding environmental contexts and the enhancement of ecological integrity. A systems approach is based on the ecosystems model as a foundational principle of sustainable agriculture and the interconnections between farming and other aspects of our environment. Sustainable agriculture is fundamentally a process. All participants in the system, including communities, farmers, labourers, policymakers, researchers, retailers, and consumers must adhere to the systems approach for this sustainable systems process to succeed.

Van Cauwenbergh et. al., (2007) observe that sustainable agriculture lacks a generic framework. They emphasize “in agriculture, unlike forestry, remarkably few efforts have been made to develop a generic, conceptual framework of Principles, Criteria and Indicators (PC&I) of sustainable agriculture. Agenda 21, Chapter 14 Section 14.2. proposes that “major adjustments are needed in agricultural, environmental and macroeconomic policy, at both national and international levels, in developed as well as

developing countries, to create the conditions for sustainable agriculture and rural development (SARD”).

The major objective of Section 14.2 was and is still to *increase food production in a sustainable way and enhance food security*. In order to accomplish these goals indicators of positive or negative outcomes will be required. Agenda 21 emphatically states “this will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, employment and income generation to alleviate poverty, and natural resource management and environmental protection (Johnson, 1993).

TABLE 1:
Examples of United States Sustainable Agriculture Goals:
(USAID, 2014)

Sustainable Agriculture Goals broadly encompass:

- ✓ Improving soil quality while reducing erosion, salinization, and other forms of degradation to achieve greater resilience to drought, better fertilizer efficiency, and reduced greenhouse gas emissions.
- ✓ Minimizing the use of pesticides and herbicides by applying practices including integrated pest management, crop rotation, and crop diversification.
- ✓ Employing environmental management systems to ensure proper treatment of solid waste, manure, and waste-water.
- ✓ Ensuring the safe storage, application, and disposal of agricultural chemicals.
- ✓ Maintaining habitats to support wildlife and conserve biodiversity.

Sustainable agriculture needs to be economically viable and sustainable to survive and prosper. Economic success depends on informed sustainable agriculture management. Sustainable education can change attitudes and outcomes of farm operators and the consumers of agricultural produce in supporting sustainability of agriculture and rural communities. One way to change attitudes is to facilitate dissemination of sustainable agriculture information by making available understandable, applicable, and usable sustainable agriculture principles, criteria, and indicators supporting sustainable agriculture and rural communities. These principles, criteria, and indicators could also facilitate identification and documentation of the appropriate pedagogical approaches

for delivering such information.

An assessment of a wide range of indicators of sustainable agriculture, and by implication, rural community sustainability makes the case that there are generally two sets of sustainability indicators that is: micro sustainability indicators and macro sustainability indicators. Micro indicators are site-specific and targeted at local and regional-scale agriculture (Jackson, et. al., 2000). Macro indicators are intended to be nationally or internationally applicable (Dariush Hayati et al, 2011). We believe that by focusing on sustainable agriculture macro principles, criteria and indicators development at the international level we can produce the most impact through influencing and supporting development of more effective default baseline micro indicators at the regional and local level.

In support of this effort, the Food and Agriculture Organisation of the United Nations, provides this disclaimer for their publication titled “SAFA Indicators“, clarifying that “*the SAFA default indicators are applicable at the macro level – meaning to all enterprise sizes and types, and in all contexts. However, default indicators of such a universally applicable tool can only contain the frame for the rating scale. SAFA provides such indicators for users who do not necessarily have the knowledge to develop indicators themselves without the risk of lowering the bar of the assessment*” (FAO, 2013). We propose a set of macro-level indicators of sustainable agriculture as a *default baseline* and a method of providing knowledge for users of sustainable agriculture indicators. These macro-level indicators are discussed in more detail below. *The objective is that developing and testing principles, concepts and theories of pedagogy supporting sustainability in agriculture and rural communities will provide opportunity to empower users with the skills to develop their own indicators of rural sustainability in general and rural well-being in specific.*

Moving from a productionist to a more systemic perspective in farming systems and a concern for sustainability has led to the formulation of more and more complex frameworks for the analysis of the sustainability of agricultural and rural livelihood systems. Sustainability, as defined in Agenda 21, has ecological, social and economic objectives and recognises the importance of understanding the nature of multifunctionality within farming systems. Many authors concerned with developing frameworks for the assessment of sustainability have explored the great variety of contexts in which they might be applied and have moved from earlier, relatively uncomplicated, frameworks with limited numbers of individual indicators, to indicator groups (EU, 2001; Bell and Morse, 2008).

Rao and Rogers (2006) explore a systems approach to assessing agriculture in order to integrate the multi-dimensional goals of sustainable agricultural development, and

identify how sustainable agriculture can underpin sustainable livelihoods. They adopt the definition of sustainable agriculture based on one provided by Tilman et al (2002): *“Sustainable agriculture is defined as a practice that meets current and long-term needs for food, fibre, and other related needs of society while maximizing net benefits through conservation of resources to maintain other ecosystem services and functions, and long-term human development.”* (Rao and Rogers, 2006, p441).

In order to identify how to achieve an integrated approach that can accommodate the multiple dimensions of environmental, social and economic aspects of sustainable agriculture, Rao and Rogers first review three existing categories of assessment frameworks namely: environmental assessments; agro-ecosystems assessments and sustainable rural livelihoods assessment, with a view to analysing the weaknesses in each approach and drawing on the strengths of each approach. Not surprisingly they find a lack of social and economic indicators in the environmental assessment approach, which limits the usefulness of these assessments in terms of sustainable agriculture. The focus within an agri-ecosystems approach on farm level activity raises the issue of an approach to assessing sustainable agriculture that is scalable, with appropriate indicators for different levels, whether that be: global, national, regional, local or farm. This highlights one of the challenges of developing a systems based framework, which is identifying where the borders and boundaries reside (Bossel, 2001; Reed et al, 2005). In looking at sustainable rural livelihood indicators Rao and Rogers draw on Chambers and Conway (1991) for a clarification of the term ‘sustainable livelihood’. *“A livelihood comprises capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with the recovery from stress and shocks, maintain and enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the long and short term.”* (Rao and Rogers: p445)

The sustainable rural livelihoods approach as presented by Rao and Rogers are underpinned by the five capitals model that has emerged over a period of time from the work of environmental economist Herman Daly. The breadth of the five capitals (natural, manufactured, human, social and financial) attempts to address the multi-dimensional nature of sustainability by assessing increases and decreases within each capital. This approach was also widely used by the British Aid Agency, DfiD, for many years for analysis and as a constructive framework for developing country farming systems and rural livelihoods. Perhaps its main weakness is the lack of acknowledgement of the importance of power and governance at local and regional levels, which SAFA (above) recognised.

The five capitals model is scalable and capable of providing an initial qualitative assessment. As with any systemic approach the relationships between the elements of the model are of key importance and those relationships can be viewed in contrasting ways as demonstrated in Figure 1, which highlights the difference of perceiving the other four capitals as being ultimately dependent on natural capital.

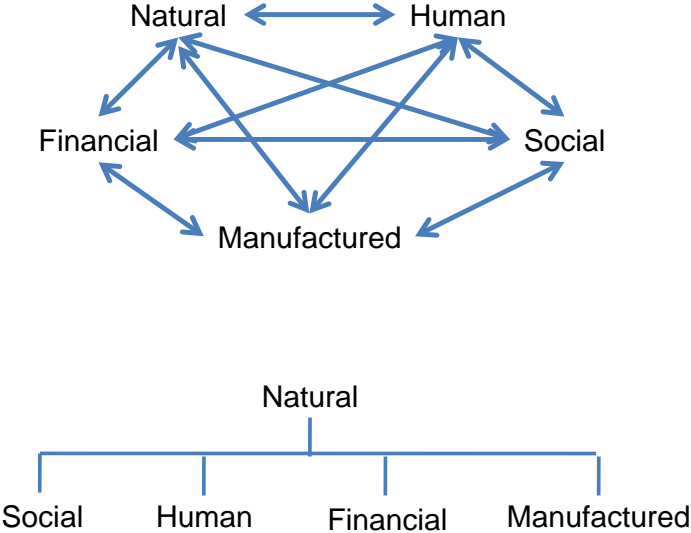


FIGURE 1: Examples of alternative links between the Five Capitals

The process of developing a more comprehensive framework that is both quantitative and qualitative and that draws on aspects of environmental assessment and agricultural assessment, requires attributing measurable values to the various capitals and identifying the movement in value between the capitals. This process results in a considerably more complex, in-depth analysis.

V. Potential Mainstream Developments In Europe Through The Evolution Of The Common Agricultural Policy (CAP).

In Europe, following an extensive review over three years, a new agreement has been reached in which farmers are supported by a more integrated set of measures. There is now a new structure for support which should be better targeted, more equitable,

greener and with support for rural development. All this combines to enable member states to encourage the development of more sustainable agricultural practices through producer cooperation, better environmental performance through more sensitive production methods, greater equity, special support for younger farmers and for small and medium sized farms. (EU, 2013).

- **Initiatives outside the mainstream agri-environment schemes.**

Since the shrinking of direct research funding through the UK social and natural science research Councils in the UK, many agricultural and related sciences researchers have looked toward the European Union (EU) for funding their main support.

For many years, the EU has strongly influenced agricultural research and rural livelihoods through the development of multi-agency and interdisciplinary research. The natural resource based projects and programmes are designed to encourage joint research initiatives across member states, which facilitate research capacity building and exchange visits on emerging themes of interest.

Some earlier EU funded research on natural resource management was designed to stimulate social learning among researchers, land managers and agency staff on a catchment scale. (eg. <https://sites.google.com/site/slimsociallearningforiwm/home>). More recent research programmes have focused on learning and innovation networks with support for sustainable agriculture. For example, the SOLINSA project involved 17 partners across Europe using transdisciplinary approaches based on participatory methods. The partners included 11 research institutions across 8 countries. (see www.solinsa.net and a series of papers in a special issue of the Journal of Agricultural Education and Extension 2015. eg. Ingram et.al., 2015) . All these programmes were based on the premise that more sustainable land management systems could evolve from learning networks between multiple resource users and actors who had different roles to play in the management of natural resources.

At a more local level in the UK, projects have emerged from the EU Rural Development Programme which have supported the establishment of partnerships of farmers, local communities, environmental and natural resource management agencies in order to develop stronger local communities, improve their quality of life and the health and well being of their landscape. One such project is the Clun Forest “Land Life and Livelihoods“ Project, which has benefited 105 farming families and 334 participants. (Shropshire Hills AONB Partnership, 2007) .

There are also examples of projects and initiatives being established outside of any national or EU framework by individuals and community groups. The Denmark Farm Conservation Centre¹ (DFCC), located between the Cambrian Mountains and the Ceredigion coast in West Wales is an example of an agro-ecology project started by an individual, which has developed into a broader sustainability project and that has both ecological and educational dimensions and is embedded in a strong community network. DFCC is a sixteen hectare holding, it was farmed until 1984 under the system that predominates in the area, which is based on improving grassland by introducing rye-grass (*Lolium perenne*) and maximizing growth with the aid of chemical fertilizers. The effect of reducing the plant biodiversity is to also reduce other biodiversity, most noticeably birdlife. DFCC demonstrates how reducing high energy inputs allows diversity to re-establish itself at all levels. Extensive ecological monitoring over the years following a change in management of the DFCC site has shown how allowing an increase in plant diversity leads to a vast increase in invertebrate diversity, which in turn has seen a significant increase in species and total numbers of birds and other vertebrates, compared to the surrounding farmland, which can best be described as a 'green desert'.

The practical experiences of DFCC have been used as a basis for training courses for landowners who wish to encourage biodiversity on their own holdings. The aim is not for every holding to be fully converted to the low level management system at DFCC, which is based on late summer hay making, and late summer and autumn grazing, but for parts of farms to be managed in this way in order to establish wildlife corridors. Since 1987 DFCC has been managed by the Shared Earth Trust and has diversified its activities to providing a range of education courses on various aspects of sustainable living alongside the ecology courses. The overall aim is to not only influence land owners, whose practice directly impacts on biodiversity, but also to influence consumers generally to understand how their lifestyles indirectly impact on the ecosystems that ultimately sustain life. DFCC is connected to, and works in partnership with the local university, particularly in relation to ecology courses, and community organisations such as the local Transition Town organization, a community woodland and the Wildlife Trust.

From a five capitals perspective, the ecological surveys provide data for a measurable increase in natural capital on the 16 hectare holding. Through the social capital of its network of community organisations and the increase in human capital through its education programme, DFCC's aim is to increase natural capital on a wider scale. DFCC has developed its manufactured capital by installing a photovoltaic array, a biomass heating system and developing its buildings for training and accommodation,

¹ See: <http://www.denmarkfarm.org.uk/about/biodiversity/>

which all contribute to increasing financial capital, with the sole purpose of re-investing in natural and human capital.

Another example that has established itself as a sustainable business outside of any national or regional support framework is the Real Seed Collection Company² (RSCC) a commercial horticultural enterprise. Based in Pembrokeshire, South-West Wales, the RSCC is aimed at providing non-hybrid and non-genetically modified seed to small-scale growers. The inspiration for establishing the Company was the decline in traditional varieties of vegetable seeds and the domination of large seed producers with a focus on a relatively small number of varieties, which are often hybrids designed to produce a single high yielding crop, but which require the purchase of new seed each year. The business model is unusual in that each packet of seed is accompanied by information on how the grower can save seed for the following year, which in effect is reducing the demand for new seed from the RSCC. However it does fulfill the aim of the Company to promote and spread the diversity of varieties, and to re-skill growers in terms of seed collection. In spite of the unusual business model the business has grown steadily since 1997 when the Company was established by two individuals and now has additional employees drawn from the local community. The Company also provides a model of how a commercial operation can apply sustainable principles to reduce its carbon footprint, to treat its staff on an equitable basis, and to influence its customers to adopt sustainable practices.

A cursory view of the Company from a five capitals perspective illustrates how the human, social, manufactured and financial capitals are all used in the broadly increased natural capital by increasing the diversity of non-hybrid seed varieties which have been in decline for several decades. The network of customers and the re-skilling of growers in terms of seed saving are the basis for this increase in natural capital. The focus on the ecological footprint of the company to minimize mechanization and to provide employment to members of the local community result from careful decision making in respect of manufactured capital and the desire to increase local social capital, while maintaining sufficient financial capital to develop the organization.

VI. Conclusion:

The above comments represent very small fragments of a complex and evolving picture surrounding aspects of sustainability among farming and rural communities. In the US, the UK and the rest of Europe, farming communities have access to, and are managing very different scales of farms and natural resources. They often have very different perceptions of the nature of sustainability in relation to farming and livelihoods. In the

² See: <http://www.realseeds.co.uk/about.html>

United States the scale of farming varies widely from vast cattle ranches to small farms and a slow growing presence of urban farming in its variety of forms. The US perception of the nature of sustainability in farming and livelihoods is more difficult to gauge, although one indicator is increased interest in organic farming over the last two decades.

At a policy level, there is recognition that some sectors of the farming community (the young, the organic and those who are very sensitive to sustainable environmental management) have been neglected in the past and there is an attempt to rectify this through more sympathetic support measure and payments. Such measures have been considered essential to counter heavily subsidised export strategies by many countries, including the US, that make it difficult for many smaller farmers in the EU to compete in World markets. There is also evidence that individuals can take action outside of policy frameworks and influence practices at local levels without the support of subsidies or incentives.

The study and analysis of sustainability remains a difficult and elusive endeavor and the design of ever more complex analytical tools may or may not, help future planning. That said, we offer a default baseline set of Indicators of rural livelihood sustainability as illustrated in Table 2 below. To reiterate, Dariush Hayati et al, (2011) propose that there are generally two sets of sustainability indicators including micro sustainability indicators and macro sustainability indicators. Micro indicators are site-specific and targeted at local and regional-scale agriculture (Jackson, et. al., 2000). Macro indicators are intended to be nationally or internationally applicable.

Table 2: Proposed Baseline Macro-Indicators	
Indicators	Source of indicator
1. Focuses on agriculture, as a symbiotic socially, economically, environmentally based system	Community Supported Agriculture (CSA) (UK/US)
2. Optimizes health of soils, plants, animals, and people.	Organic Agriculture

3. Uses ethics, design principles and locally adopted practices, to achieve equal ecological footprint	Permaculture
4. Enhances resilience, ecological, cultural, social / economic sustainability of farm systems.	Agro-ecology
5. Sustains environmental health, economic profitability, and social and economic equity.	National Sustainable Agriculture Coalition
6. Provides suppliers and buyers with prices that reflect the true cost of the entire process of sustaining a regenerative ecological system, including support for the livelihood of primary producers, their families and employees.	Fair trade and supply chain equity (SAFA: Sustainable Assessment of Food and Agriculture, FAO, 2013, p. 185.)

We believe that a framework of indicators for sustainable agriculture can only be relevant and influential when located within a broader set of indicators for well-being, sustainable livelihoods and community resilience. Developing a set of baseline macro-level indicators that see sustainable agriculture as part of this broader systemic whole is a foundation for developing and customizing micro-level indicators that are adaptable to all micro-level conditions and contexts. Table 2 above illustrates a macro-level set of indicators of sustainability in agriculture and livelihoods and well-being.

The macro-level set of indicators presented in Table 2 above is not intended to be complete. It is proposed as a flexible and customizable starting point with the intention that the indicators listed herein will be tested, altered and improved on. Within research, there is an increasing emphasis on inter and trans-disciplinary thinking and practice and the recognition that all actors and stakeholders have important, participatory roles to play in collective learning for more sustainable rural livelihoods and well-being .

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