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The Evolving Life Improvement Approach: From Home Taylorism to JICA Tsukuba, and Beyond

Tomomi Kozaki* and Yusuke Nakamura†

Abstract

In this article, we examine the history of the Life Improvement Approach (LIA) from around the turn of the 20th century, and propose a LIA model based on Japanese experiences following World War II to JICA Tsukuba training courses for Latin American countries, taking into consideration recent advances in information and communications technology (ICT) available in developing countries. In this paper, we first review the history of LIA, pointing out that self-determination and self-management (agency enhancement and pragmatism) are the two principal pillars of the current LIA model elaborated in JICA Tsukuba training courses. We also stress the importance of ‘accompaniment’ by extension workers. We reformulate LIA as an enhanced microeconomic model based on Mokyr (2002) to clarify its relevance as a development policy. We then analyze the case of a small association in Costa Rica using digital photos taken by extension workers, pointing out the necessity of operationalizing the model to fit onsite practices. Based on this foundation, we present a blueprint for a new digital system for sharing images and texts of LIA, called SIMEVI, which provides a bridge between the theoretical model and onsite practices, and underlines the importance of an analog foundation for the system to fully function as an ‘engine’ to support LIA in developing countries.

Keywords: life improvement approach, self-determination, self-management, information communications technology (ICT), analog foundation.

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Introduction

For more than a decade, the JICA Tsukuba International Center has been exploring ways to make international cooperation for rural development more sustainable and effective. It has been organizing group training courses since 2005, focusing on participatory rural development with an emphasis on capacity development and life improvement. The key component of the courses is the Life Improvement Approach (LIA), based on the experiences of rural development in post-WWII Japan. About 300 people from Latin American countries—mostly agricultural extension specialists—have participated, with many subsequently endeavoring to incorporate LIA into their policies and programs in their home countries. This result provides some evidence of the successful diffusion of the JICA group training courses for rural development in Latin America.

Despite these developments, the precise definition and specific characteristics of LIA remain in question. An examination of the plans and activity reports of LIA practitioners (JICA Tsukuba 2006; Secretaría de Campo 2010; REDCAM Costa Rica 2012; REDCAM Nicaragua 2012) reveals that understandings of LIA vary considerably. LIA may be used, as mere tautology, to characterize every policy and act to improve life. Any government or international cooperation agency can set forth life improvement as the primary development goal, and attract little opposition; but at the same time, the term can mean nothing. We agree that a certain degree of freedom of interpretation is natural for every human concept. The case of LIA raises interesting and important questions for development policies because of its subjectivity in its essence and the pragmatism in application in diverse contexts.

The infectious enthusiasm among the trainees is clearly a high point of LIA. For example, when we asked JICA trainees about the meanings of LIA in Mexico, Honduras, and Nicaragua, many

answered that “activities for life improvement were engaged in gradually (“poco a poco”) by rural women, mainly making use of locally available resources.” While we do not think this kind of answer is incorrect, there is an urgent need to put forward a model and framework that will help to maintain the distinctive characteristics of LIA, which is the primary purpose of this article. At the same time, it is necessary to leave room for trial and error by LIA groups, with regard to the material constraints, social norms and institutional settings of each country.

Another issue for LIA concerns ways of monitoring its processes, and evaluating its outputs and outcomes. Traditionally, analyses of causality through the controlled monitoring of preset parameters have been pursued to assess the impact of the development projects. However, LIA is not well suited to such a formalized approach because of its subjectivity, openness, and flexibility concerning the definition of ‘life.’ Moreover, undertaking detailed descriptive research of the activities onsite is likely to be unfeasible, because of inefficiency and ineffectiveness both for researchers and those who are researched. Still more challenging is the need to extract lessons from hundreds of experiences documented by JICA trainees and other LIA practitioners working in 13 Latin American countries.

The recent transformation of socio-technological settings of development projects has brought a new twist to this challenge. Hitherto, the main analyzers of development projects were researchers, and their principal channels of communication were highly condensed reports and articles printed on paper. As is well known, the participatory movement such as PRA (participatory rural appraisals) since the 1990s has prompted a rethink of the role of researchers vis-à-vis people on the project site and other stakeholders (Chambers 1983). Moreover, the surge of the global digital information network since the 2000s has pushed this move one step further: many people can share digital texts and images online with portable digital devices, even in rural areas of developing countries (World Bank 2015). These two-fold trends have brought about a

structural change in the ecosystem in which LIA inhabits. First, it has opened up the possibility of enhancing the two main pillars of the present LIA significantly: self-determination and self-management (agency enhancement and pragmatism). Secondly, it invokes a reconsideration of the role of researchers in such development projects.

In fact, LIA has transformed gradually since its start in the USA around the turn of the 20th century. In this article, we trace the history of LIA, focusing on the roles of main stakeholders and the socio-technological conditions. We argue that the present state of LIA has evolved to encapsulate the following two pillars: self-determination and self-management (agency enhancement and pragmatism). First, it should be considered as a kind of collective action research conducted mainly by LIA group members accompanied by the extension workers. On the pragmatic side, LIA encourages participants to make use of materials and social resources that are close at hand, and from a critical perspective. Not every trial leads to satisfactory results, but participants can learn a lot from the process of trial and error. From this perspective, the role of the researchers changes too. While they remain the experts in data analysis and interpretation, the collection of data is not their specialized area as before. Proposals of ideas for better methods/tools to collect and analyze data and communicate the findings for life improvement are also an important area the researchers are expected to contribute to.

Section 1 situates the origins of LIA within two historical contexts: first, the emergence and advance of home economics in the USA since the turn of the 20th century; and second, the experiences of rural development in post-WWII Japan. The main features of LIA in both countries are synthesized as two different models. Following this historical and comparative analysis of LIA, we present the model and critical assumptions of LIA that are used in JICA training courses, making clear the distinctions between the conventional rural development model and LIA.

Section 2 provides an abstract model of LIA based on the mathematical model developed by Mokyr (2002) to facilitate the understandings of LIA in the light of new research on the microeconomics of development. This enhanced microeconomic model is useful for the macro level analyses of aggregated data on LIA from policy perspective. On the other hand, we also have to accept that the formalization of LIA a la Mokyr by itself barely captures the minutiae of life improvement efforts onsite.

Thus, Section 3 shows a descriptive analysis of the five-year experiences of LIA in a small association of coffee farmers in Costa Rica since 2010. This small association, Asociación Mixta Agroecoturística Los Lagos (AMAGRO), is located in the deepest wellhead mountains in the Aranjuez-Sardinal territory of the Puntarenas region. AMAGRO has served as a kind of developmental lab for reflecting on what LIA is, how it works, and what are the visible and tangible outcomes in the Latin American context. In the analysis, hundreds of photos taken and archived by the extension workers since 2010, and reflections on them by themselves and AMAGRO members reveal the subtlety and dynamism of the life improvement process onsite. This experience has led us to develop the idea of a digital information system for sharing images and texts on LIA, as discussed in the next section.

Section 4 starts with an argument for the necessity of a better digital ‘engine’ for sharing LIA experiences. The term “engine” was used by Mackenzie as “an active force transforming its environment, not a camera passively recording it” (Mackenzie 2006). On the other hand, a “strong analog foundation” is indispensable for obtaining full benefits from digital technologies (World Bank 2015). In this section, we explain the basic concept, initial design and the current state (as of the end of 2016) of the new system named “*Sistema de Información de Mejoramiento*

de Vida” in Spanish (or SIMEVI), and point out that the accompaniment¹ of local participants by extension workers and support provided by various stakeholders provide the key elements of the “analog foundation” for SIMEVI. Finally, in our Conclusions, we summarize our findings, closing with a discussion of future prospects.

1. Evolution of LIA Models

In this section, we summarize the evolution of concepts, policies, and activities developed under the name of ‘Life Improvement’ since the beginning of the 20th century in the USA, through post-WWII Japan, to JICA training courses. First, we revisit the experiences of home economics in the USA and the rural life improvement policy in post-WWII Japan to synthesize their characteristics as two different models of LIA (as shown in Table 1). We then present the definition and critical assumptions of LIA used in the JICA Tsukuba training courses in order to clarify the distinctions between the conventional rural development model and LIA.

1.1 Comparison of LIA in the USA and Japan

The origins of the Life Improvement Approach (LIA) can be traced back to the age of industrialization of the late 19th century in the USA. Labelled publicly as ‘home economics’ in the 1920s, LIA has been evolving over the past 100 years, while being adapted to differing contexts in various countries, such as post-WWII rural Japan and Paraguay (Instituto Desarrollo 2013) among others. For JICA trainees and rural village practitioners in developing countries, LIA may be interpreted as an emerging and somewhat amorphous field of rural development distinct from conventional approaches. As a first step in abstracting the common features among different experiences of LIA, we conduct a comparative analysis of the two public policies concerning life improvement, one in the USA and the other in post-WWII Japan.

¹ Use of the word ‘accompaniment’ here will be discussed more fully in Section 2.

1.1.1 USA

In the USA, the names and institutional arrangements of policies for life improvement have experienced various changes since the 1880s, from domestic science, home engineering to home economics. Regardless of these changes, however, the same underlying critical assumptions of the American approach for life improvement have been maintained. We can condense them as follows: “The incorporation of the rational scientific management system of the factory known as Taylorism into domestic work may reduce the burden on homemakers and improve family life, in particular, their health and nutrition.” Through a critical review of various studies on home economics in the USA (Fujiwara 2016; Goldstein 2012; Leavitt 2002; Shapiro 1995; Kashiwagi 1995; Cowan 1983), we have determined that Taylorism is the fundamental concept underpinning the American manifestation of the Life Improvement Approach.

Taylorism is a theory of scientific management of work systems developed by Frederick Winslow Taylor between the 1880s and 1910s, whose main purpose was to make the factory workplace more efficient so as to maximize labor productivity. Factory work and domestic chores occupy equal ground in the scientific management of work systems; consequently, the operational process of cooking, for example, can be divided into various segments composed of preparation, cooking, arrangement, serving, washing and storage. Each segment can be rationalized in terms of time and motion by observing each physical movement of homemakers, in a similar way to automatized factory workers’ operations, which can be measured by a chronometer and pedometer (Kashiwagi 1995, 106).

The Bureau of Home Economics of the U.S. Department of Agriculture (USDA) was the principal institution in charge of the transference of the concept and techniques of scientific management of Taylorism, from modern factory to emerging home fields. Home economists, a

new professional grouping established by the Bureau of Home Economics in 1923, were public agents who promoted a scientific and rational domestic working style. According to this method of scientific rationalism, later to become known as “Home Taylorism,” the physical work of domesticity was no more than a simple necessity, to be executed with speed and skill and by utilizing available appliances, such as the kitchen unit, washing machine or dishwasher (Shapiro 1995, 222).

Based on the guiding principle of Taylorism, new automatic machines were necessary for factory workers in order to maximize labor efficiency. Likewise, for the homemakers, newly developed home appliances and ready-to-serve foods were instruments to be acquired. Working as professors and agricultural extension agents, home economists developed curricula to train American women in what they called the principles of ‘intelligent buying’. They encouraged a diverse audience comprised primarily of white, middle-class homemakers living on farms and in small towns to learn from cost-benefit analyses of household budgets, and showed them how to undertake practical tasks such as canning vegetables, sewing clothes, or choosing appliances. According to Goldstein, home economists, as public agents with a higher degree of authority, played a mediating role among their primary targets: lower middle-class homemakers with food companies, cooking clubs and public institutions (Goldstein 2012, 17).

In synthesis, LIA in the USA has been shaped as trilogy composed of (1) Home Taylorism, the fundamental concept of life improvement understood as scientific and rational management of domestic work by homemakers; (2) home economists as authoritative public agents of Home Taylorism and also as creators of ‘wise consumers’; and (3) private companies as providers of ready-to-eat meals and home appliances for those consumers. This trilogy functioned as an engine to drive the ‘outsourcing of life’, and thus, according to Cowan, alienated the homemaker from her private domain (Cowan 1983, 5).

1.1.2 Japan

In the case of Japan, initiatives to introduce Taylorism into domestic work can be observed as early as the 1910s in some private circles of domestic scientists. At that time, life improvement was a popular term considered synonymous with rationalization, modernization, and westernization of traditional Japanese lifestyles (Kashiwagi 1995,172-178; Ozeki 2015, 81-92).

After WWII, the Japanese government introduced LIA officially as a public policy for rural development. As a new institutional structure for the extension of LIA, the Agricultural Improvement Promotion Act was promulgated in 1948, and the Life Improvement Promotion Service Division was set up in the Ministry of Agriculture and Forestry (MAFF). Under the direction of this division, a body of extension workers for life improvement, composed of highly motivated female college graduates, was established in every prefecture, along with more numerous teams of agricultural extension workers under the direction of the Technical Extension Service Division.

This institutional structure of MAFF rests on a critical assumption about rural development in postwar Japan: that is, from the beginning, rural development must be promoted by two different bodies of extension workers on a nationwide scale. One body consisted of (male) agricultural extension workers in charge of all the issues related to agricultural production, including organizational aspects, such as reinforcement of farm cooperatives; and the other was composed of (female) life improvement extension workers who covered the all of the boundless aspects of life.

The main purpose of this article is not to provide a full historical description of LIA, but it is important to mention that in the initial stages of LIA in post-WWII Japan, MAFF adapted a

substantial portion of the American approach. The General Headquarters of the Allied Forces (GHQ), which governed Japan from 1945 to 1952, promoted rural life improvement based on the experiences of the USA as part of the politics of democratization in Japan (Ota 2008; Sato 2014). Therefore, the influence of Home Taylorism was preeminent, although to create wise consumers with new appliances was not a solution for Japanese rural families devastated by the war and deeply mired in poverty.

In this context, the concept of ‘improvement’ (or Kaizen in Japanese), understood as a way of discovering labor saving skills and devices without spending money, was the prime force behind Japanese LIA. Teaching manuals for life improvement extension workers were edited to promote these kinds of good practices of life improvement in the USA. For example, the following depiction of the ‘continuous’ kitchen at the end of the 19th century the USA was used to demonstrate the importance of life improvement practice and applied widely in mid-20th century rural Japan. It has been used as a successful case study of Japanese LIA to teach JICA trainees.

Lilian Gilbreth’s search for the “one best way” in the kitchen began with charts and graphs outlining every possible physical movement. Her “continuous” kitchen, a series of linear workspaces, emulated the efficient factory. One of her basic demands was for appropriate heights for kitchen counters and workspaces. Suggested as early as 1888 by Sallie Joy White, who wrote that “the height of the working-table” was the cause of “the constant strain on the muscles across the small of the back”, the appropriate height for kitchen counters still had not taken hold in all kitchens in the 1920s (Leavitt 2002, 56).

In addition to economic constraints, strict social norms and customs of patriarchal rural society hindered the exercise of agency in life improvement by homemakers. In Japanese rural society, where conforming to ancestral social norms has been attached to high social values, every initiative for life improvement by rural women, particularly by younger homemakers, had to confront punitive social norms. The health and nutrition of rural families, among various necessities of rural life improvement, were considered to be the most important issues. For rural women, who were constantly overworked as homemakers as well as agricultural laborers, and often caregivers for elderly persons, to be able to take a rest at least half a day per week was set up as an urgent goal of LIA by MAFF (Noka Noson Mondai Kenkyukai, 1986).

Due to social norms, the goal of taking a few hours of rest, however, did not prove easy to implement. Prevailing social beliefs meant that for those living in the same community, if a number of rural families did not allow half a day rest per week to a younger homemaker, then it would be difficult for other families to do so. Only if a large majority of rural families allowed her to take a break, then there would be no problem for other families either. To induce such a change, it would be necessary for someone to take the initiative and challenge invisible and tacit social equilibriums. In the same way, rural women had to confront various social norms that prohibited them from engaging in income-generating activities useful for life improvement or taking part in management of the household budget.

Consequently, finding ways to improve life under strict socio-economic constraints and empower groups of younger homemakers as change agents to induce shifts toward more favorable social equilibriums were critical issues of rural development in postwar Japan. In terms of the time frame for such changes, equilibrium change takes time, and may be a generational task. Meanwhile, opportunities for the improvement of life—for example,

introducing more nutritionally well-balanced food menus, or making more suitable clothes for agricultural work—can be identified and realized in a short period.

Matsuyo Yamamoto, the first Director of the Life Improvement Promotion Service Division of MAFF, provided innovative ideas on both issues. According to Yamamoto, who studied home economics in the USA, the principal goal of extension for rural development is not merely the diffusion of agricultural technology or life improvement skills but rather the enhancement of self-determination and self-management capacity of rural women. Skills useful for life improvement should be considered and treated simply as incentive tools. She repeatedly points out the necessary distinction between life with livelihood, understood as a means for income generation, and the importance of the intrinsic valuation of life, considered as the primary domain for homemakers for the enhancement of the self-determination and self-management capacity (Yamamoto 1975).

First and foremost, we have to redefine the meanings of life, as concretely as possible. “Life” is an indispensable realm, a controllable and immediate sphere of influence for all. The most important field of life improvement is family. I had to fight always against the majority of bureaucrats of the MAFF who believed that the “economic growth would automatically improve life” (Katakura 2011, 128-129).

In the institutional structure of rural development of MAFF, livelihood improvement corresponds to agricultural extension workers. For the majority, according to the experiences of Yamamoto, rural development meant nothing more than income generation through agricultural

production. Consequently, the role of life improvement extension workers was deemed to be worthless unless their activities were helpful to income growth for rural families.

In synthesis, in the context of poor and patriarchal rural society of Japan, Yamamoto and life improvement extension workers preserved three fundamental assumptions in their efforts to introduce and promote LIA:

- (1) Income growth does not necessarily improve life.
- (2) Enhancement of the self-determination and self-management capacity of rural women must be the principal pillar of LIA.
- (3) Unproductive and detrimental social equilibrium must be changed in order to scale up the process of life improvement.

In Section 1, we have summarized the different experiences of LIA in the USA and Japan as two models of LIA, as shown in Table 1. There are similarities between primary targets/actors, the institutional structure and support system, and, above all, the application of Home Taylorism as an efficient management system of homemaking. Remarkable differences can be seen in regard to the principal goals, modality of extension workers and outcomes and impact. In the USA, home economists, with their authority as public agents, trained women to be more efficient household managers and to assume the role of ‘wise consumers’. Consequently, the meaning of ‘life’ would be reduced to the rational consumption of convenient food and purchase of new appliances in the mass market (Shapiro 1995, 221-225). The implication of this approach is that, without income growth, there is no possibility of life improvement.

In contrast, in Japan, as three fundamental assumptions of Yamamoto clearly demonstrate, the primary goal of LIA has been the enhancement of the self-determination and self-management capacity of rural women. They have to develop their capabilities to reflect on the meanings of

life and identify opportunities for improvement of life. Life improvement extension workers should be teachers to cultivate self-reliant farmers, rather than mere technical advisors, according to Ogura, the intellectual guru of LIA in Japan (Ota 2008, 175-176). With the accompaniment of these extension workers, rural women have striven to shift unproductive and detrimental social equilibriums toward more favorable ones.

Table 1. Two Models of LIA

	Home economics in USA	Seikatsu Kaizen (Life Improvement Approach) in Japan	
Primary targets/actors	White, lower middle-class homemakers living on farms and in small towns	Women in farm household	
Institution in charge	Bureau of Home Economics/U.S. Department of Agriculture	Life Improvement Extension Service Division/Ministry of Agriculture, Forestry and Fisheries	
Support system at local level	Home economists	Life Improvement extension workers	
Principal goals	1. Establishment of scientific and rational management of homemaking based on Home Taylorism 2. Conversion of homemakers into wise consumers	1. Enhancement of self-determination and self-management capacity of rural women 2. Development of group activities in order to induce changes for more favorable social equilibrium 3. Development of skills and devices useful for life improvement	
Understandings on life	1. Private domain of homemakers 2. Physical work of domesticity as simple necessity to be rationalized	1. Distinction of life with livelihood 2. Indispensable realm, controllable and immediate sphere of influence of homemakers 3. Unbounded fields to be identified by homemakers according to the priorities and possibilities of improvement	
Key activities	1. Teachings of scientific and rational management of chores based on Home Taylorism 2. Training of women in preparation for the "intelligent buying" 3. Invention and diffusion of appliances and convenience food	Labor saving skills	Agency enhancement
		1. Scientific and rational management of life based on Home Taylorism 2. Diffusion of labor saving skills	1. Enhancement of self-determination and self-management capacity 2. Development of group activities for life improvement 3. Promote changes of conventional and patriarchal social norms
Field	1. Household, mainly kitchen 2. Commercial Marketplace	Household	Household and rural community
Modality of extension workers	Teaching, training and persuasion with public authority as home economist	Teaching and training	1. Empathy and accompaniment with younger homemakers 2. Pragmatism and practitioner's first approach
Artifacts	1. Manuals and magazines of public institutions, schools, cooking clubs and food companies 2. Home appliances and integrated kitchen system 3. Canned food and other ready-to-serve food	Manuals and guidelines edited with good practices of American Home Taylorism	Manuals, guidelines and visual artifacts based on social norms and vivid experiences in Japan
Outcomes and impact	1. Life improvement in accordance with the purchasing power of each household 2. Creation of rational and wise consumers 3. Expansion of mass market of home appliances and convenience food 4. Outsourcing of life and alienation of homemakers from her private domain	1. Rational management of some aspects of homemaking 2. Material improvement with limited effects	1. Enhancement of self-determination and self-management capacity of rural women 2. Development of Life Improvement Groups at the national level 3. Changes of social equilibriums from detrimental to more favorable ones for rural women 4. Set up of JICA training courses on LIA 5. Improvement of life through the application of LIA by JICA trainees in various Latin American countries
Scale-up	Expansion of mass market of new appliances for "wise consumers" by food company, cooking clubs and magazines, public institutions and schools.	1. Institutional structure to implement LIA with legal basis, on a nationwide scale from the beginning 2. Networking of Extension Workers and Life Improvement Groups at the prefectural and national level	

Source: Authors

1.2 LIA in the JICA Tsukuba Training Course

As noted above, the JICA Tsukuba International Center has been organizing group training courses focusing on rural development utilizing a Life Improvement Approach since 2005. Almost 300 trainees from Latin American countries have so far participated. They come from various backgrounds, professional careers, institutional settings, and societies with different social norms. During their six weeks in Japan, they learn the theoretical aspects of LIA and

conduct field research to learn directly from the experiences of life improvement extension workers and groups of rural women who have practiced life improvement activities over the past half-century. In this section, we summarize the underlying model of LIA taught in these JICA courses, clarifying the differences between the JICA approach and conventional rural development approaches.

The instructors of JICA training courses strive to create a precise model of LIA, elaborated based on the experiences of the postwar rural Japan and, at the same time, applicable to the rural development contexts of Latin American countries. To start with, the trainees must understand two essential distinctions. The first is between ‘improvement of life’ and ‘improvement of livelihood.’ This distinction has caused serious confusion among JICA trainees because a majority of participants have never considered the possibility of life improvement without income growth. Livelihood is related to the ‘means of life.’ In the context of rural development, we define ‘improvement of livelihood’ as an increase in agricultural output, and thus, household income and consumption growth. The distinction between the increase in household income or consumption and improvement of life is fundamental.

The key assumption of LIA in the JICA Tsukuba training courses is that there are vast fields in which ‘improvement of life’ can be achieved without income or consumption growth. As explained in Section 1, in the home economics context of the USA, ‘life’ was understood quite narrowly as the rational consumption of convenient food and purchase of new appliances. This approach implies that without income growth, there will be no life improvement. Consequently, there is no difference between life and livelihood in the American approach. In contrast, in Japan, JICA trainees are able to verify through field studies that income growth does not necessarily improve life. The living testimonies of the life improvement group members in Japan attest that

“improvement of life can be achieved without money,” and “excessive work for production is detrimental to life.”

The second distinction is between the “conventional approach” and the “agency enhancement approach.” We define the “conventional approach” as an approach that achieves some objectives of rural development through the provision of goods and services. The principal difference to the agency enhancement approach is that the conventional approach is a supplier-centered model that does not focus on the agency enhancement and motivation of rural families (Yanagihara 2016). Under conventional methods, integrated rural development projects combine three components: agricultural production, social development, and organizational reinforcement. According to our understandings, project planners of integrated rural development consider social development as a first step to induce growth in agricultural production. The outcome of this approach is supposed to be livelihood improvement through income growth. We have observed various integrated rural development projects supported by JICA in Latin America. The social component of these projects is, for example, provision of a water-supply system to small villages, construction of small health posts, establishment of short-term knitting classes, among others. The villagers select a couple of small projects from pre-established menus after ‘participatory’ workshops. But in what sense can these projects and activities develop the capacity of rural women and improve life?

The ‘agency enhancement approach’ places great value on self-determination and self-management capacity by way of intrinsic motivation (Sayanagi and Aikawa 2016). Agency enhancement is the dominant causal mechanism or channels of LIA, based on the following four assumptions:

- (1) Rural women by themselves identify, improve and apply the skills necessary to improve their living conditions.
- (2) Based on the analysis and reflections of their life improvement experiences, self-reliant agent of life improvement will be cultivated.
- (3) Life improvement extension workers organize and promote group activities and collective thinking in life improvement.
- (4) Support from public institution assists in training and managing the life improvement extension workers.

Items (3) and (4) are institutional structures particular to Japan, so JICA trainees have to consider functional substitutions depending on different institutional settings.

These distinctions enable us to differentiate between four approaches to rural development, as classified in Table 2. Unlike conventional agricultural development, LIA seeks to improve living conditions directly through agency enhancement, not always through the provision of goods or services. Unlike typical social development, LIA is not used to carry out sector-based projects or provide skills for training courses but to develop self-reliant agents of life improvement. There are various approaches that emphasize the enhancement of agency: Participatory Rural Development, Farmers Field School, and the Special Programme for Food Security are some examples of these. Their primary goals are, however, not life improvement but, rather, livelihood improvement.

Building on these distinctions, we define the fundamental premise of the underlying model of LIA as follows: “Application of the methods and techniques used in post-WWII rural life improvement in Japan has made it possible to achieve certain development goals—in particular, those related to rural development.” Our purpose is not to claim the supremacy of LIA for rural

development. Rather, we encourage JICA trainees to explore the possibility of a better combination of different approaches for sustainable rural development, appropriate to their particular contexts.

Table 2. Different Approaches to Rural Development

	Improvement of Livelihood	Improvement of Life
Conventional Approach	Agricultural development for income growth	Social development for sectoral outcomes (Education, health, water and sanitation, housing, etc.)
Agency Enhancement Approach	Participatory Rural Development, Farmers Field School, or Special Programme for Food Security of FAO, among others.	Life Improvement Approach

Source: Authors

The JICA trainees receive various manuals and texts on LIA during the course. These illustrations are samples translated into Spanish of a graphic manual of life improvement edited by the Ministry of Forestry and Fisheries (MOFF) in 1954. Figure 1 clearly shows the influence of Home Taylorism. Figure 2 demonstrates various opportunities for health improvement without spending money. Figure 3 introduces various methods to induce changes in social norms, and Figure 4 illustrates activities of life improvement extension workers.

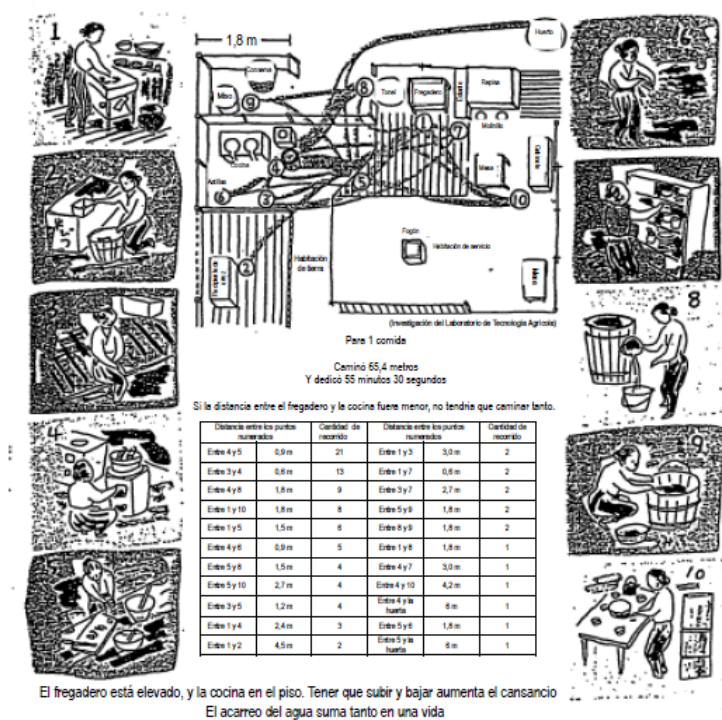


Figure 1. Improvement of Kitchen

Source: Ministry of Agriculture and Forestry, Japan (1954). Spanish translation added by JICA Tsukuba.

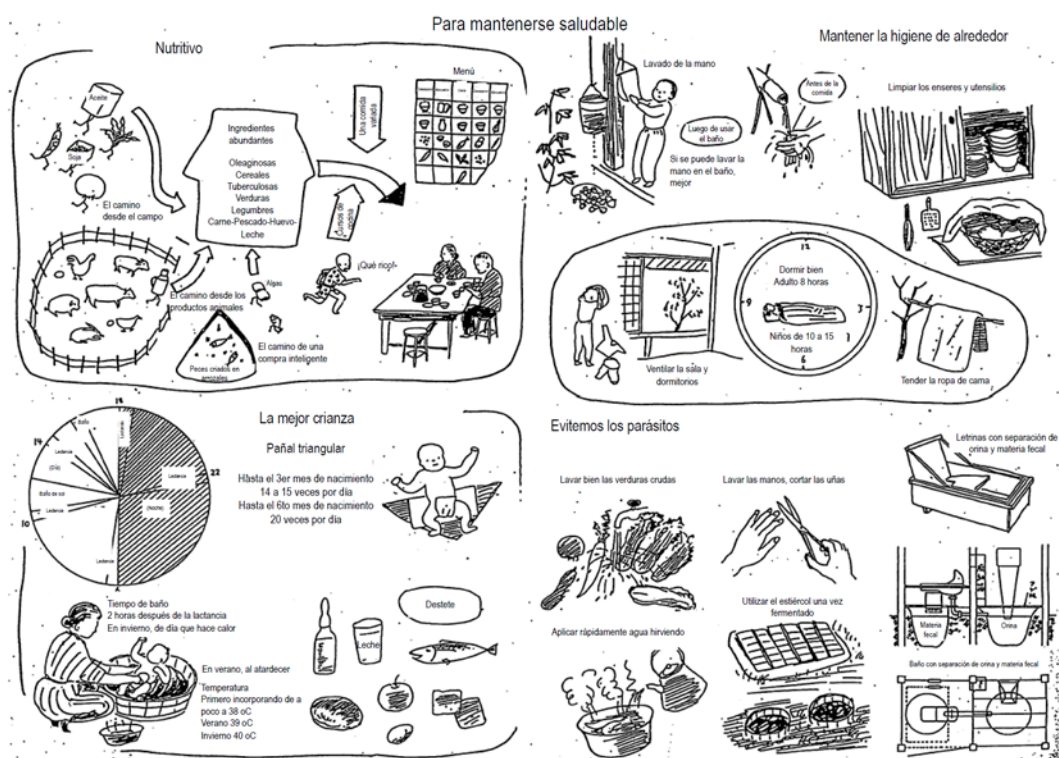


Figure 2. Ideas for Improvement of Health

Source: Ministry of Agriculture and Forestry, Japan (1954). Spanish translation added by JICA Tsukuba.



Figure 3. Ways of Changing Social Norms

Source: Ministry of Agriculture and Forestry, Japan (1954). Spanish translation added by JICA Tsukuba.

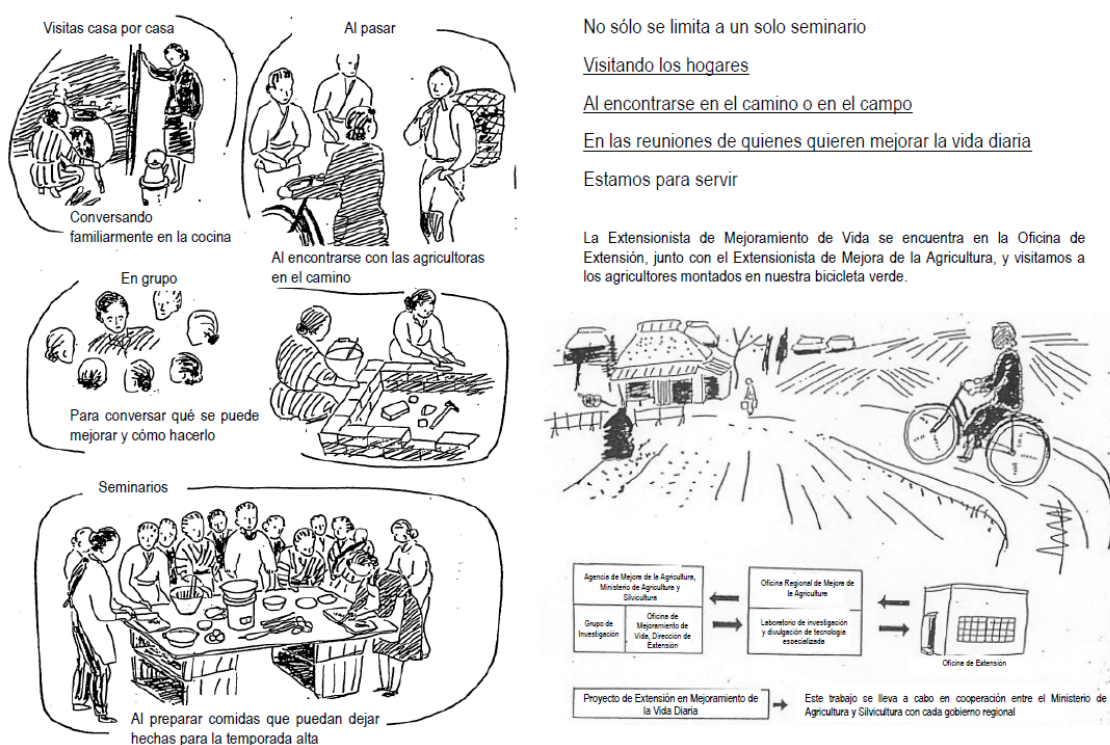


Figure 4. Activities of Life Improvement Extension Workers

Source: Ministry of Agriculture and Forestry (MAF), Japan (1954). Spanish translation added by JICA Tsukuba.

2. Enhanced Microeconomic Model of LIA

In this section, we present an enhanced microeconomic model of LIA, which is a revision and adaptation of the household knowledge and health model developed by Joel Mokyr (2002), applied to LIA. The primary purpose of this model is to clarify the distinction between life improvement and livelihood improvement within a framework of microeconomics. After providing an explanation of the model, in Section 3 we examine its usability and limitations through a descriptive analysis of the experience of LIA in a small association of coffee farmers in Costa Rica.

In microeconomics, an individual is supposed to have a utility function. As explained in the previous section, home economics in the USA intended to prepare homemakers to perform

domestic work efficiently and manage household budgets economically. Their approach was the conversion of homemakers into rational and wise consumers of new appliances and convenient food. To this end, according to Goldstein, home economists had to define the physical quality of a wide range of consumer goods, thus embedding them with middle-class values of health, cleanliness, efficiency and economy (Goldstein 2012, 29). Homemakers had to learn the value of commodities based on the ‘law of marginal utility’, stylized in the 1880s, which means that demand and consumption are more important than supply and production. In this sense, home economists advocated the maximization of utility by way of the wise selection of commercial goods. The livelihood improvement through this type of maximization of utility can be explained using a conventional model of the utility function. Figure 5 indicates the difference of utility functions between livelihood improvement and life improvement.

In order to explain LIA, we need an enhanced model incorporating life improvement utility as a particular composite variable. In principle, a utility function can express any motivation (Akerlof and Kranton 2010, 9). We cannot define a priori, however, which kinds of goods or activities compose the improvement utility, because one of the critical assumptions of LIA is: “rural women by themselves identify, improve and apply the skills necessary to improve their living conditions.”

2.1 Utility Function of LIA

First of all, we define the essential utility function as formula (1):

$$(1) U_j = U_j(X_{Ij}, \dots, X_{nj}, I_j, L_E, L_D),$$

where I is a composite variable conducive to life improvement; the X 's are goods purchased in the market or (re)discovered in their surroundings; the L 's are time spent on leisure (L_E) and domestic work (L_D) respectively.

Consumption is subject to the usual budget constraints $\sum X_i P_i = Y$, where Y is income allocated to the consumption of goods X_i with price P_i , as well as to the time constraints $24 - L_E + L_D + L_W = 0$, where aggregated time spent on leisure (L_E), domestic work (L_D) and productive (income generating) work (L_W) must correspond to 24 hours.

The distinctive characteristic of this setup is that I is determined by the household production function:

$$(2) I_j = E + \sum_i f_i(X_{ij}, L_{Dj}),$$

where E is a common factor independent of the consumption basket ("uncontrollable environment"), f is the vector of household production functions that transforms the goods consumed and time spent producing them into life improvement. Each good X_i is converted by household j into 'life improvement good' using f_i in conjunction with a dose of L_D . The functions f are unobserved technical relationships. They tend to be complex beyond the household's full comprehension at almost any level of household rationality. This formula, however, highlights the dominant causal channels of conversion of time and goods into life improvement.

According to Mokyr, this model is akin to the so-called cognitive limitations model in which rural women are neither entirely informed nor totally ignorant of the implications of their choices of time and goods for life improvement. The cognitive limitation is a concept closely related to Herbert Simon's bounded rationality. We suppose that Matsuyo Yamamoto was aware

of this cognitive limitation on life when she reiterated that, “first and foremost, we have to redefine the ‘meanings of life,’ as concretely as possible. (Yamamoto 1975, 3)”

In this sense, homemakers may find it difficult to verify or refute in advance the outcome of life improvement in light of a series of choices of goods, because the causal chains among the options and results are very hard to observe and the lag structure may be complex and unknown. Moreover, these procedures are often constrained by social norms as we explained in the previous section. As a pragmatic solution to overcome this problem, the introduction of life improvement activities with short-term and tangible effect, such as the use of improved stoves with high energy efficiency was recommended as an entry point of LIA in Japan. Providing improved stoves to rural households may demonstrate the immediate or mediate effects, such as lower consumption of fuelwoods resulting in decreased labor inputs for fuel collection and consequently, reduced fatigue and fewer maladies caused by smoke. Making visible and tangible the causal links between a particular good X_i and its life improvement effect is therefore useful.

But for the continuous increase of the life improvement variable I , the aggregation of various goods X_i complemented with domestic work L_D as an open-ended chain of activities is indispensable. As happened in the ‘intelligent buying’ experiences in the USA and various projects of conventional rural development, JICA trainees point out that sporadic behavioral change does not necessarily lead to accumulative activities for life improvement. The LIA approach attaches special importance to long-term changes for life improvements, which would be enabled and sustained by agency enhancement and group activities, as will be explained in the next section.

2.2 Three Paths toward Life Improvement

Figure 5 shows three possible paths toward life improvement. On the first and second paths, income effect and substitution effects are life improvement as a common term without agency enhancement. The last one, the learning effect, is what constitutes LIA.

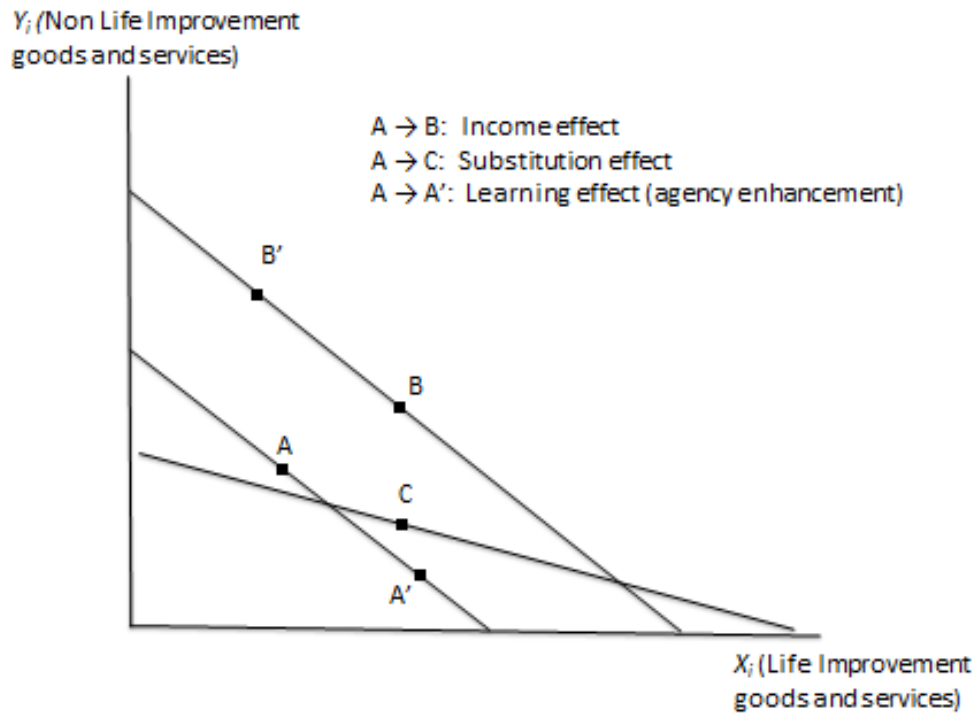


Figure 5. Three Possible Paths toward Life Improvement

Source: Authors

As a prerequisite of this model, we suppose that homemakers are indifferent in their choices of goods and services without the collaboration of life improvement extension workers. By the same token, they are not aware of the possibility of life improvement through in-house production or improvement of existing goods. As a concrete example, consider the case of a rural woman who used to buy vegetables cultivated with chemical inputs. After acquiring

knowledge and skills for life improvement, she decided to grow organic vegetables for household consumption. Before the introduction of LIA, vegetables were not X_i neither Y_i in Figure 5 with no specific meanings in light of life improvement, simply because she was not aware of this concept. But after acquiring knowledge and being convinced of the utility of organic goods for health and nutrition, homegrown organic vegetables constitute X_i for her while plants with chemical inputs mean Y_i .

Income effect

The income effect is an orthodox path of the principles of microeconomics, congruent with livelihood improvement approach, which supposes that the upward movement of a budget constraint line can improve life. In Figure 5, the transition from point A to B entails a consumption increase of life improvement goods. This orthodox path does not consider the possibility of deterioration of life caused by overwork, nor the transition from point A to B', which means the overconsumption of life-deteriorating goods.

In the JICA training course, a Japanese extension worker provides an example as a bitter lesson from her own experience in the 1970s in Nagano Prefecture. The boom of vegetable cultivation in greenhouses increased household income and consumption but, at the same time, the health condition of these families deteriorated, including one fatal case in which a community member died due to overwork. Using an enhanced utility function with life improvement utility, we can better describe this kind of trade-off, that an action may increase production and consumption but decrease life improvement utility. However, if she is not capable of identifying a set of goods X_i and time constraints ($24 - L_E + L_D + L_W = 0$), how is it possible to value life improvement? Also, if she is not capable of choosing this set because of social norms, income increase does not have any positive effect on life improvement.

Substitution effect

The substitution effect supposes variations in the preference ranking shown in Figure 5, as the slope changes in the budget constraint line, which may cause the transition from point A to C for increased consumption in life improvement goods. International cooperation for rural development is aimed at causing changes in relative prices to increase the consumption of life improvement goods, by donation, subsidies or other forms of incentives to households. The lack of sustainability has been problematic of these kinds of rural development projects. Without an agency enhancement, which may consolidate the slope changes, point C may revert back to the initial point A at the end of the rural development project.

Learning effect

The supposition of LIA is that life improvement is possible through the transition from point A to A' without changes in the budget constraint line (Figure 6). This path does not exclude the use of incentives from outside, such as donations or subsidies, but gives greater importance to the accompaniment of rural women by the extension workers. The supposition of this path is that the enhancement of the self-determination and self-management capacity of rural women will induce an open-ended chain of life improvement activities without income growth necessarily.

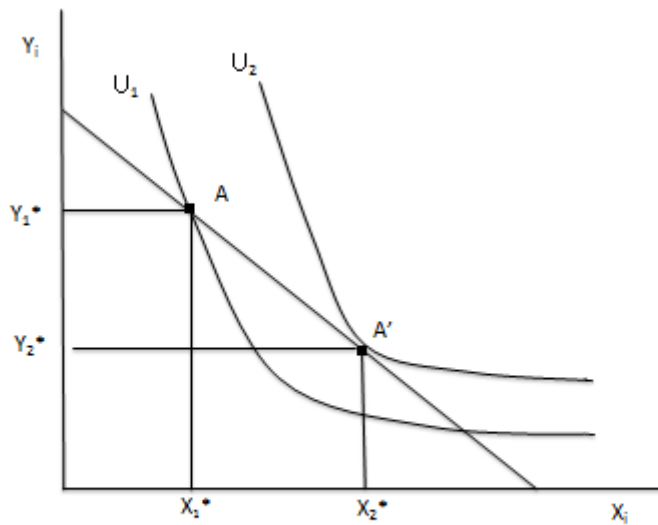


Figure 6. Intertemporal Increase of Utility through Learning Effect

Source: Authors

2.3 Accompaniment and LIA

The accompaniment (*acompañamiento* in Spanish) is a spiritual element in the Japanese LIA model that has caused confusion among JICA trainees. The ‘accompaniment’ is derived from the Latin, *com panis* which means ‘sharing bread’ or ‘brotherhood’. In the context of LIA, we define the accompaniment as the “capacity of the extension workers to be there for rural women with empathy.” Empathy means the “ability and attitude to contemplate and share the sentiment and experiences of another.” We found the same modality of accompaniment among community health workers of Partners In Health (PIH) in Haiti. According to Paul Farmer, the Harvard medical anthropology professor and co-founder of the PIH, “there’s an element of mystery, of openness, of trust, in accompaniment.” He underscores the importance of accompaniment as follows:

The Accompaniment is different from aid. “Aid” connotes a short-term, one-way encounter: one person helps, and another is helped. Accompaniment seeks to abandon the temporal and directional nature of aid; it implies an open-ended commitment to another, a partnership in the deepest sense of the word. The term “accompaniment” is more about walking together – journeying with another – than about standing fast. At the journey’s beginning, we aren’t always sure where the path will lead; and we’re almost never sure where the end will be. Uncertainty and openness and patience and humility are inextricable from accompaniment (Farmer 2010, 552-555)

‘Openness’, ‘patience’, and ‘humility’ are the characteristics and requisites for life improvement extension workers. We agree with the depiction of Farmer’s accompaniment in the sense that the transition from point A to A’ in Figure 6 is not a simple change of choice of particular goods, but is a result of ‘walking together’ between extension workers and life improvement group members. The importance of this point should be especially highlighted because of the vulnerability of the lives of the poor (Collins et al. 2009). The accompaniment by extension workers is a prerequisite for them to launch themselves into the trials and errors of life improvement, even if they use goods X_i and their own domestic work L_D . In this sense, utility increase means agency enhancement in LIA.

2.4 Cognitive Function and Time Constraints of LIA

Formula (3) indicates the effect of accompaniment in life improvement between extension workers and rural women. We integrate a cognitive function $[A_i - \varepsilon_{ij}]$ to emphasize the importance of the quality of skills, accompaniment, and the self-management capacity for LIA.

$$(3) \quad I_j^e = E + \sum_i [A_i - \varepsilon_{ij}] F_i(x_{ij}, L_{di})$$

where I_j^e is the prior that the rural household has over the determination of I , and E is an environment over which the household has no control. Fi is the set of best-practices of life improvement. A means the precision of proposed practices for life improvement within the bounds of $0 < A < 1$. ε indicates the self-determination and self-management capacity for LIA of rural women. The scope of ε varies from perfect self-management to total rejection against changes, $0 < \varepsilon < 1$. We consider the value $[A - \varepsilon = 1]$ is optimal.

Let us explain what is meant by $[Ai - \varepsilon ij]$ in detail. $[Ai - \varepsilon ij]$ is a cognitive function of I . $A = 1$ means the best practice, that is, the perfect realization of the effects of a particular X on life improvement. By contrast, $A = 0$ means that nobody has any idea if X has any effect on life improvement. Rural households obtain new skills from extension workers or find out by themselves the mechanisms for how the good X_i and their associated household labor L_{di} jointly produce I . Constrained by cognitive limitations, without trial and error onsite, even extension workers cannot be sure about the precision of F nor the best combination of X_i and L_{di} . Therefore, it is necessary to introduce A_i as a shift factor that measures the degree to which ‘best practice’ grasps the optimal effects of good i on life improvement. In the introduction of an improved stove, for instance, the form, size, material, location among other elements constitute shift factor A . To determine and examine the precision of factor A will be much more complex, for instance, in the case of organic vegetables depending on the agro-ecological conditions, nutritional utility and other factors.

εi is an individual-specific measure of the difference between individual j ’s skill, and the best-practice skill regarding good i . If the good i satisfies the condition $A = 1$, ε may be used as a resistant variable measuring the gap between the best practice and what an individual believes. As we explained in the previous section, social norms functioned as a resistant variable against

life improvement initiatives in the rural society of post-WWII Japan. The introduction of labor saving goods and skills with perfect function ($A=1$), a ‘perfect’ improved stove, for example, had to overcome resistance from older generations (from $\varepsilon=1$ toward $\varepsilon=0$) to be effective in life improvement ($A - \varepsilon = 1$).

To understand the importance of the set of $(A - \varepsilon)$, we present once again the fundamental assumption of LIA. Matsuyo Yamamoto argued that the principal goal of extension for rural development is not merely the diffusion of agricultural technology or life improvement skills but rather the enhancement of self-determination and self-management capacity of rural women. Skills useful for life improvement should be considered and treated simply as incentive tools. Along with this argument, we consider that the set of $(A - \varepsilon)$ reflects the intensity and quality of interactions between extension workers and rural families, in particular, younger homemakers.

Figure 7 shows two paths for life improvement if $A - \varepsilon < 1$, apart from the already mentioned changes of relative prices X_i . The first one is if $A < 1$, an increase of A , which means fine-tuning or upgrading of skills useful for life improvement for both extension workers and rural women. The accumulation of best practices of LIA may compose a set of stylized recipes for life improvement in health, nutrition, and community environment among various categories of life. For a better accrual of skills, MAFF organized several training courses and workshops such as nutritional cooking and elaborated useful texts, manuals, videos for extension workers and rural women. The quality and usefulness of these artifacts are vital for the increase of the precision of A . The second path is the reduction of ε , if $\varepsilon > 0$. It depends on the quality and intensity of the accompaniment, development of self-management capacity, and strength of social norms in each local setting. Reduction of ε to a level near 0 is a necessary condition for life improvement to adapt the fine-tuned skills A continuously.

Finally, we have to consider the time constraint problem of LIA. We previously mentioned the importance of the introduction of techniques of “Home Taylorism.” These techniques are valid as an entry point to induce the changes of ε , and also will be useful in time and labor saving for homemaking. If a rural woman turns her appreciation of the impact of life improvement good X_i by raising $A_i - \varepsilon_i$, then she would consume more of that good than before. For example, good X_i may be a healthy fresh green salad cultivated organically in her home garden. This practice will increase L_D if it is complementary with household labor. An increase in $A_D - \varepsilon_D$ that is a greater appreciation of the X_i to I effects of housework will lead to a redeployment of time for homemaking.

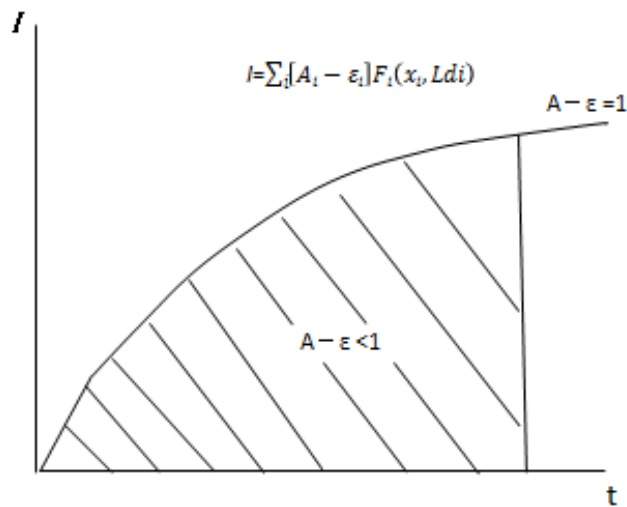


Figure 7. Optimal Curve of Life Improvement

Source: Authors

As a synthesis for sustainable life improvement through the continuous optimization of $(A - \varepsilon)$, we conclude that the accompaniment of extension workers is a precondition for the optimization

of ε . Under the condition of $(A - \varepsilon) \doteq 1$, agency enhancement sustained by life improvement group activities will optimize the elements of set X_i for a lifetime long, which result in the optimization of I .

3. Experiences of LIA in AMAGRO

In this section, we examine five years of experiences of LIA from a small group of coffee-growing families known as AMAGRO in Costa Rica since 2010. The experiences of AMAGRO members—including children and accompanied by three extension workers—are lucid examples of collaborative activities aimed at understanding, analyzing and equipping the lives of rural families.

We have collected as much qualitative data and information as possible to analyze the increase of a set of A , reduction of ε , diversification of X_i , and consequently, changes of I . Fortunately, the extension workers were equipped with analog tools (pamphlets, copy paper, stationery, etc.) and information communications technology (ICT) devices (digital cameras, personal computers (PCs), slide projectors and cellular phones). It was thanks to those hundreds of documents, images and reflections by extension workers and AMAGRO members that we could examine the development process of LIA there since 2010, which would have been almost impossible by relying on several short visits to the sites.

Based on these experiences, a new idea emerged: if the photos and words on LIA activities by the group members and extension workers could be archived and shared online, this could provide a more powerful ‘engine’ for LIA as action research. We explain the basic concept of the system (named SIMEVI) in the next section, but let us use the photos and texts accumulated in the first version of SIMEVI in the following descriptive analysis of AMAGRO. We linked nine entries in

SIMEVI in order to demonstrate the photos with texts, such as “improvement of communal areas,” “workshops on LIA,” “adjustment of the height of a sink,” from a total of 65 entries² since April 2010. Readers can check all the entries on the following site: <http://www.mag-jica-emv.net>.

We start the description with a backgrounder, focusing on the failure of integral rural development in AMAGRO. Following this, we analyze the process of life improvement using the enhanced microeconomic model presented in Section 2, and referring to the entries of SIMEVI.

3.1 Background

AMAGRO (Asociación Mixta Agroecoturística Los Lagos) is the name of the small association of coffee growing families located in the deepest wellhead mountains in the Aranjuez-Sardinal territory of Puntarenas region, Costa Rica. Since 2010, AMAGRO came to be better known as a living laboratory of LIA. The villagers receive delegations from Costa Rica and various Latin American countries and introduce them to the visible and tangible outcomes of LIA in each household and the entire group. We consider that AMAGRO to be a model case of regeneration of a ‘community’ through LIA after the impasse of integrated rural development.

AMAGRO was formed as a self-reliant cooperative with more than 20 families in 1986 under an agreement with Agrarian Development Institute in charge of resettlement of landless peasants. In the mid-1980s, integrated rural development was considered a mainstream approach, and the development projects of AMAGRO were considered a model case. Various Costa Rican

² Please note that in some cases, we do not possess photos of several important events of life improvement efforts in AMAGRO, yet later photos of the same places show us the consequences of the trial and error up until then.

government institutions coupled with an international cooperation agency and NGOs intervened in the recently formed community by offering a variety of projects, including:

- (1) diversification of production such as shade coffee planting, macadamia, cardamom, tilapia culture;
- (2) technical advisory services for contour farming, soil conservation, windbreaks;
- (3) improvement of community infrastructure: access road, electricity, housing; and
- (4) other projects, such as biogas and organic compost.

The continuous slump of international coffee prices in the 1980s and 90s combined with crop damages to cardamom as a result of plant diseases wreaked severe economic disruption, a situation which led to the dissolution of the cooperative as various families decided to migrate to urban areas. Since then, until the arrival of three extension workers trained at JICA Tsukuba International Center, AMAGRO was mostly abandoned, leaving desolate land with only five families living in rundown houses, with scarce maintenance on coffee plants, essential services, or other donated installations. The communal area became overgrown with grass; and there was a pool of untreated sewage and various vermin. The failure of the integrated rural development approach has been a familiar story in Latin American countries since the 1970s,³ due to high costs, difficulties in institutional arrangements, bad sequencing among various projects, and lack of sustainability, among other factors.

The three extension workers focused attention on the possibility of agency enhancement for life improvement through accompaniment. The three former trainees—two women, and one man—possess common characteristics, including more than 20 years of experience in various

³ There is abundant documentation on the failure of this approach, including a systematic critique synthesized by Trivelli, Escobal and Revesz (2010).

approaches to rural development, a demonstrated learning capacity, and a keen interest in LIA. They have also maintained contact with Japanese experts on the internet after returning from Tsukuba, and shown clear devotion to their mission. The Rural Development Program of the Ministry of Agriculture and Livestock (PRD-MAG) to which they belong, was also looking for a new approach after the stagnation of conventional rural development strategies.

After the visits and surveys of various communities in the area of Aranjuez-Sardinal on the possibility of the introduction of LIA, the three extension workers decided to work with AMAGRO, because of its geographical isolation, small size, and last but not least, the interest of the families in listening to the experiences of life improvement in Japan. Access to the community was so bad that no other competing institutions and NGOs were working there around that time.

3.2 Process of LIA in AMAGRO

Reduction of ϵ

Beginning in March 2010, biweekly meetings between the extension workers and AMAGRO members were held for six months. This stage of slow but continuous discussions constituted the starting point of accompaniment necessary to earn the trust at a personal level. During the workshops, extension workers asked members repeatedly about the meaning of life, resources available to them, their priorities, and desires for their lives. As emphasized during the JICA Tsukuba training courses, the extension workers assumed the role of facilitators, not teaching nor leading but consulting and asking questions repeatedly what they want to do to improve their life.

Several months afterwards, a senior female member of AMAGRO changed the height of her sink without any instruction. After observing the photos of the continuous kitchen in Japan and

listening to the effects of a decrease in physical pain, she decided by herself to try to adjust the height of her sink⁴. As a result, she noticed that her back pain disappeared. This small change was a breakthrough in agency enhancement. Catching the momentum, the extension workers motivated them to form a life improvement group and work collectively, telling them the importance of reflection after any action for life improvement.

Although the removal of pain following the spontaneous adjustment of the sink's height was almost intangible to the other members of the family, they followed the suit by taking part in the series of life improvement activities. We think that it is the effect of the repeated meetings for exchanging ideas about the meanings of life and the desires of the members. The succession of various devices culminating in the continuous kitchen is an exemplary case of sustainable life improvement: the rearrangement of the location of the sink, stove and other instruments of the kitchen. This was followed later by the knocking down of a wall that had separated the kitchen from the dining room, which resulted in longer family mealtimes with more natural light and ventilation. The level of the activities has scaled up gradually from personal, to family, then to the group level. According to the extension workers, the villagers demonstrated the various changes contentedly every time they visited the area.

Small but tangible changes

(1) Removal of physical pain.

We should remember that the whole process culminating in the comfortable and healthy continuous kitchen started with the removal of the physical pain of the homemaker. Such an effect may seem barely tangible for other people, but there was a sympathetic response from her family members, leading them to jointly obtain more tangible and visible effects.

⁴ The photo reveals that the effect of the improved kitchen remains intact several years after the installation.

(2) Devices to reduce fatigue

After the workshop on improving opportunities for health, the members decided to wear hats and long-sleeved clothes to protect themselves from sunburn, and take a bottle of water with them in prevention from dehydration when working in the fields.

(3) Prevention maladies

After the fieldwork, the villagers decided to wash their hands well before attending to children. Also, they keep their work boots clean inside the house so that vermin did not enter their boots.

Increase of a set of A

A bio-garden is an ecological system for sewage purification. The professional team of the National University demonstrated techniques to install and maintain the system and all of the community members, including children, participated in the workshops to draw up the plan, and undertook the civil engineering works to install the system. As a result of this process, they understood the functions and the significance of the system. Nobody from the PDR-MAG—apart from the extension workers—had believed that a group of poor farmers could install and maintain the system by themselves. It is important to mention that before the installation of this system, the area was a sewage pool, and overgrown with grass.

As the first step of life improvement activities, and on the advice of the extension workers, the members decided to clean up the area. In the group meetings, they discussed the ideas of life improvement such as making the playing field safe and available for children, to take social responsibility for natural conservation as a riverhead area, and the revitalization of the communal house abandoned in the midst of the contaminated communal area. This is agency enhancement at the group level—the result of repeated workshops with extension workers and

the invited experts of relevant subjects. Encouraged by the chain of small but tangible gains for life improvement, they achieved a successful outcome. Now more than twenty neighboring communities have similar sewage purification systems. This type of scale-up is an example of the positive and efficient externality of LIA.

The introduction of the organic vegetables in a home garden is the usual practice of rural development projects, but its effects are also highly relevant to LIA. First of all, according to the enhanced microeconomic model presented in Section 2, the *A*, meticulous skills are necessary for growing organic vegetables in accordance with the agro-ecological conditions of the site. In AMAGRO, a team of specialists provided instructions on growing methods. Furthermore, agency enhancement and pragmatism are necessary to fully make use of such skills and knowledge. Without self-determination and self-management, it is difficult to put into practice knowledge about self-consumption and marketing under severe time constraints. Members of AMAGRO—both men and women—are very proud of their organically homegrown vegetables, which have made it possible for them to have a more varied diet. They correctly identify the purchased vegetables with chemical inputs as ecologically damaging, with adverse effects on health and savings; organic vegetables, on the other hand, are ecologically sounder, better for health and money-saving.

Identification and diversification of *Xi*

By asking themselves questions on the meaning of life and the possibilities of life improvement with accompaniment by the extension workers, AMAGRO members have developed the capacity to identify a set of life improvement goods and have diversified the contents and activities of a set *Xi*. Readers can verify all of the following aspects in the images and texts on SIMEVI:

- working conditions (types of clothes and a bottle of water suitable for fieldwork),

- continuous kitchens,
- organic vegetables,
- healthy menus using locally and organically grown materials,
- housing renewal,
- bio-gardens,
- arrangement of communal houses,
- production of chairs and tables for group meeting with locally available materials,
- repair of biogas, and
- repair of the tilapia cultivation pond.

3.3 Impacts of LIA on AMAGRO

By field observation and conversation with AMAGRO members, we found various impacts resulting from LIA.

(1) Social capital

Before the introduction of LIA, there were very few opportunities for socialization among AMAGRO members. They had never invited neighboring families inside their houses. Now they enjoy the group work of LIA together and organize guided tours for delegations.

(2) Livelihood improvement

AMAGRO members decided on the total overhaul of the coffee plantation, which resulted in a 300% increase of yields in three years. Following this, they obtained finance for the installation of coffee processing equipment, and other productive activities. And finally, after 25 years of negotiation, all the family members of AMAGRO obtained official land titles from the government. All these results were made possible thanks to the strong social capital and the commitment of AMAGRO members to improve their lives long-term.

(3) Generational transmission of LIA

The son of an AMAGRO member decided to live in AMAGRO as a farmer thanks to the renewal of the house and coffee plantation. For him, the rundown house was a source of shame, but now he can invite his friends proudly to his proper room in the renewed house. The householder, his father, says that he had sufficient resources for household renovation, but had not thought of realizing it before discovering the idea of life improvement.

(4) Living Lab of LIA

AMAGRO constantly receives delegations from various countries, including onsite learning sessions for follow-up courses of JICA Tsukuba. Also, various TV and radio programs on the experiences of AMAGRO have been produced and transmitted with messages and presentations by AMAGRO members and extension workers.

(5) Scale up

Observing the process of LIA in AMAGRO, MAG decided officially to conduct action research to validate LIA in eight territories in Costa Rica for four years, commencing in 2015 (FITTACORI. 2013). Based on the results, MAG will decide to incorporate LIA as an official policy for rural development at the national level.

4. Designing a Better ‘Engine’ for LIA

In the preceding section, we analyzed the dynamism and subtlety of the $(A - \varepsilon)$ optimization process with the case of AMAGRO. In fact, we may never know the perfect recipe for life improvement. Stylized recipes demonstrated by the extension workers, such as bio-gardens and organic vegetables are certainly promising candidates of A. And yet, they must be modified to fit

the local contexts on the initiative of the local people. No other people can accomplish this subtle tuning process. It might even be the case that the proposed recipes, as such, turn out to be erroneous or inappropriate to the local situations. In that case, resistance (ϵ) from local participants should instead be considered as a reasonable conscious reaction. On the other hand, we should also anticipate cases in which ingenious new ideas may emerge by trial and error onsite. We have previously observed plenty of such cases happening in developing countries (Teutsch 2015).

Evidently, the conventional standardized monitoring methods with prefixed parameters do not fit this kind of reiterative exploratory process. However, this does not mean that detailed descriptive studies by visiting researchers are more appropriate. As was already pointed out in the literature on participatory development (Chambers 1983, and many others), it is inefficient and ineffective both for the researchers and those who are researched. First, it is almost impossible for outsiders to carry out all-embracing detailed observations of the daily life of LIA group members. Second, it is ethically unacceptable for the latter to be the targets of this kind of exhaustive research. Still more, it is detrimental to their agency enhancement, a core element of LIA.

We should rather consider LIA as a kind of action research conducted mainly by the LIA group members accompanied by the extension workers and supported by other stakeholders including researchers.

4.1 LIA as Action Research and its Engine

Action research is a generic term for a wide range of research approaches that share several core principles:

- (1) Collaboration among the parties concerned with the particular situations or issues, and
- (2) a reiterative process of finding problems, searching for solutions and monitoring the consequences (see Lewin 1946; Kock n.d. for studies on the practical consequences of technology-enabled actions)

LIA evidently shares these core principles. Moreover, special characteristics of LIA as action research are:

- (1) LIA brings to the fore the agency enhancement of LIA group members.
- (2) LIA covers the totality of life.

In this framework, the proposal of better methods/tools for realizing life improvement is also an important task of the researchers. In this section, we explain our basic concept of a new ‘engine’ for LIA using ICT. However, the technical aspects of such a system will be discussed in another article.

Let us start with the discussion of the meaning of ‘engine’ in this article. Here we used the term following Callon (2005) and Mackenzie (2006). First, Callon defines “economic activities and markets” as “technico-economic networks, including a growing number of actors concerned in some way by the analysis, equipment and shaping of markets. He then argues that “we can agree to use the term economics at large to refer to all the activities, whether academic or not, engaged in these networks and aimed at understanding, analyzing and equipping markets” (Callon 2005, 9). In a similar vein, we argue that LIA as a form of action research refers to all the activities, whether academic or not, engaged in the technico-social networks of LIA group members, extension workers, administrators, aid agencies and researchers, and aimed at understanding, analyzing and equipping life of the former.

Following the discussion of Callon, MacKenzie (2006) borrowed the term engine. This term was first used by Friedman in 1953 to explain his methodological views of modern economics: “economic theory is “an ‘engine’ to analyze [the world], not a photographic reproduction of it” (Friedman 1953, 35). However, academic analysis does not occur in a vacuum. MacKenzie reconceptualized this term beyond the intention of Friedman, taking into consideration the importance of market’s infrastructure and performativity: engine as an “active force transforming its environment, not a camera passively recording it [=market]” (MacKenzie 2006, Chapter 1, location 215 of 5169).

MacKenzie (2006) uses this engine concept to analyze the impact of academic research, mainly the capital asset pricing model, on modern financial markets. We should recall that LIA also has its own engine, even if it is much more modest than the one for modern financial markets: a network of people supported by unpaved roads, shabby vehicles, paper documents etc. They have been extensively employed to understand, analyze and equip the lives of LIA group members. And PCs and cellular phones have recently been added to the list.

4.2 ICT and Analog Foundation for LIA: Sharing Image and Texts

ICT (Information and Communication Technologies) has started to change the information environment of the modern world including Latin America drastically. ICT is now acknowledged as a general-purpose technology of the 21st century, and systematic analyses of trends, impacts and policy implications in a wide range of sectors have been conducted by international organizations and individual researchers. *Measuring Information Society Reports* by ITU monitors trends in ICT development. The *World Bank Report 2016 “Digital Dividend”* offers an overview of the present situation. In the following section, we discuss the potential of ICT for sharing images and texts of LIA.

While all five senses (hearing, sight, touch, smell, and taste) are important in our lives, vision plays a major role (Johnson 2014). Analog photography was a powerful tool for capturing the visual aspects of daily life during the 20th century. Even though we cannot hear, touch, smell or taste the photographed scenes when examining photos, we can infer the sensory experiences to some extent, using our memories and prior knowledge of the scenes. In addition, experts in specific domains can extract important information from the photos without having to attend the scene on their own. The crossing of the vantage point of the photo takers and that of the experts is one of the vital points of LIA as action research.

Unfortunately, analog photography has been inhibited by high costs and was previously too difficult to manage to be employed extensively in rural development projects. However, portable digital cameras have lowered the financial and technical costs of capturing on-the-spot images of daily life significantly. Furthermore, networked portable digital devices have enabled people to archive a huge number of digital photos with metadata online. The potential impacts on life improvement efforts are enormous, because they technically enable LIA practitioners to keep a visual track of their own trial and error processes in life improvement within various settings, and to check the changes occurring that may be difficult to notice without these images. In the preceding section we tried to make use of the digital photos of AMAGRO taken by the extension workers since 2010. It is a situation nearly unconceivable 15 years ago. Around that time, it was almost only visiting researchers who could afford to take pictures of daily lives in rural areas.

In fact, sharing photos on social networking services (SNS) is already popular in Latin America, including in rural areas. However, it may be too optimistic to expect that significant life improvements will result just from using SNS. Agency-enhancing and pragmatist efforts are necessary to exploit the potential of digital photos for life improvement, as is suggested by the history of LIA. Above all, language plays an important role. Direct communication between the

various stakeholders is indisputably a key element of LIA as action research: between men and women, elderly and young, villagers and extension workers, etc.

However, words exchanged onsite disappear into the air without trace, and the texts, namely strings of characters deprived of voices and gestures, have been used to provide a visual track. Unfortunately, we human beings are not biologically wired for reading and writing texts (Dehaene 2009; cf. Johnson 2014). It is an extremely onerous task to create a text capable of representing the complete experiences, thoughts and feelings, or to interpret texts written by others appropriately (Olson 1996). The task is especially burdensome in rural areas where it is difficult to secure materials and a comfortable space to concentrate on reading and writing. The situation did not change much with the spread of personal computers because of poor power supply and a climate unfavorable to electronic appliances. Instead, it is the propagation of networked portable digital devices that has finally lowered the hurdle of text writing, reading and image handling in rural areas. It is now rather easy to share texts as well as photos online even in outdoor settings.

As a result, it is becoming technologically feasible to keep visual and textual records of LIA activities online on an unprecedentedly large scale. It is a promising situation change for LIA, because it opens up the possibility of sharing digital images and texts created by the primary stakeholders to monitor the unfolding of life improvement efforts, while leaving room for trial and error onsite. Section 3 provided a performative test of the new possibilities, and this section is conceived as an academic blueprint for a new engine.

Current technology is not yet sufficient to determine the consequences: “Digital technologies can make routine, transaction-intensive tasks dramatically cheaper, faster, and more convenient. But most tasks also have an aspect that cannot be automated and that requires human judgment,

intuition, and discretion” (World Bank 2015, Overview). What the World Bank calls an “analog foundation,” namely a “strong ensemble of regulations, skills and institutions,” is indispensable for obtaining the full benefits from digital technologies.

In this article, we do not intend to undertake a detailed analysis of the analog foundation of LIA. However, we would like to emphasize that accompaniment by extension workers is its core element, and that the latter needs moral, financial, intellectual and technical support from the administration, aid agencies and researchers. The ensemble of all these stakeholders is the analog foundation of LIA. Only if managed by a strong analog foundation is the development a new engine feasible. As such, it should be utilized as a tool for natural extension of the existing life improvement efforts.

4.3 Basic Concept of SIMEVI

For the reasons above, we proposed a plan for a system to share images and texts of LIA activities online in 2014. JICA adopted the idea, and the first version of the system named SIMEVI (Sistema de Información de Mejoramiento de Vida) has been in operation since 2015, implemented jointly by JICA and MAG-Costa Rica.⁵ Figure 8 provides a general visualization of LIA activities using the system.

⁵ The general design of the system is supervised by Dr. Hideki Mima (The University of Tokyo) as a member of the follow-up committee of JICA Tsukuba training courses.

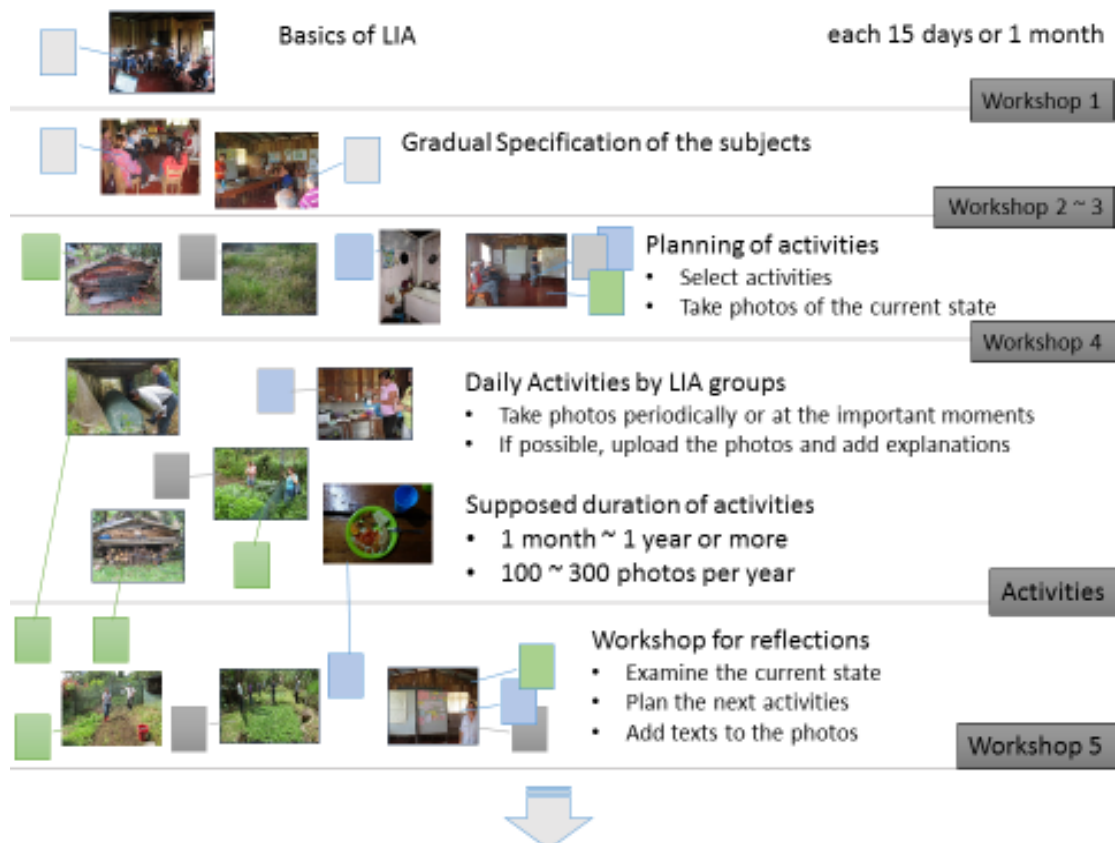


Figure 8. General Image of LIA activities using SIMEVI

Source: Authors

At each step, the extension workers and LIA group members take photos, then upload them with explanations to the website when ready. The consensus between the LIA group and extension workers for the selection of photos and texts is crucial in the whole process.

1. The first several workshops are dedicated to discussions of the present situation and the importance of LIA. Thus, photos of early workshops tend to show the participants merely sitting together, and any words exchanged in the first workshop are rather general or fragmented impressions of daily lives. However, this stage is crucial for LIA.
2. As the workshops are repeated, the topics discussed gradually shift from descriptions to analyses, and to concrete strategies for dealing with the issues. Group members should play a more central role in the discussion, and the same photo can be linked to different texts

depending on the subject matter discussed. We do not expect the photos to reveal remarkable changes or dramatic events, but if they are taken and observed carefully, subtle changes will be noticed such as the participant composition and their appearance.

3. When the activity plans are determined by the group, the life improvement activities start. Photos and texts are taken during the process. Workshops for monitoring and reflection are held periodically or at important moments. Stakeholders can search and browse images and texts, and see a summary of results at different scales and conditions.

The principal inputs for the first version of SIMEVI are as below:

Principal inputs for SIMEVI (as of December 2016)

- Main photo
- Additional photos
- LIA Group name
- Date when the contents were observed
- Title of the entry
- Objective of the contents
- Details
- Categories (multiple choice)
- Productive activities/*Autogestión*(Self-determination and self-management)/Quality of Environment/Interinstitutional Coordination/Family Economy/
Home Education/Infrastructure/Community Infrastructure/Health/Housing
- Location (Google map)

The data uploaded to the system are open to the public, while editing and commenting functions are restricted to registered members (mainly extension workers and LIA groups) for the moment.

As a model case, photos, metadata and texts on AMAGRO since 2010 have been uploaded to the system, with other LIA groups joining gradually. As of December 2016, a total of ten groups with extension workers have registered on the system, nine of which are the targets of the validation project by MAG, Costa Rica. The remaining one group belongs to the Dominican Republic. They have uploaded photos and images to check the usability of SIMEVI with the support of an expert from JICA. We are planning to invite other ex-trainees of JICA Tsukuba Training Course to join our image-and text-sharing network in the near future.

There are a total of 115 entries so far (as of December 2016). Interestingly, many of the images uploaded are the scenes of gatherings, and the category selected (multiple choice) most frequently so far is *Autogestión*(self-determination and self-management) (Table 3). These facts suggest that the extension workers have started their accompaniment prudently with repeated workshops to reflect upon the meaning of life and the priorities and desires of the members. We expect that the entries related to concrete activities will increase gradually. Interestingly, one of the first concrete activities after the learning phase in a group of Orotina district was gymnastic exercises for women, commencing in October 2016.

Table 3. Distribution of Categories of LIA in SIMEVI (as of December 2016)

Categories	Number of entries
<i>Autogestión</i> (self-determination and self-management)	100
Health	72
Environment	62
Household Economy	60
Home Education	41
Housings	41
Productive Activities	38
Infrastructure	30
Community Infrastructure	20

Source: Authors

4.4 Roadmap of SIMEVI Development

As is the case with many online systems, SIMEVI is a dynamic system under constant revision.

Table 4 shows the main stakeholders and their roles in the road map for the development of SIMEVI.

Table 4. Development of SIMEVI: Stakeholders & Roadmap

Stakeholders/ Activities	LIA Groups	Extension Workers	Promoters of SIMEVI (MAG)	Administration (MAG)	JICA and Researchers	ICT Consultants
Start SIMEVI (2015)	Commence trial and error process and reflections on LIA	Introduce SIMEVI to the residents	Organize workshops for notes and photos taking	Disseminate policy and guidelines of SIMEVI	Design SIMEVI; Support admin and promoters	Develop SIMEVI 1.0
Record Activities (2016~)	Take notes and photos of LIA	Take and register notes and photos	Support notes and photos taking	Operate SIMEVI	Monitor LIA- SIMEVI activities on line and on site	Monitor usability and functioning of SIMEVI
Data Management		Check data quality				
Analyze Data				Analyze, visualize and interpret data		Support analysis
Share Results	Share and discuss the results; Propose improvement plans			Disseminate the results and get feedbacks	Produce reports on the results	
Update SIMEVI	Continue trial and error process and reflections on LIA	Take and register notes and photos	Support notes and photos taking	Update policy and guidelines	Support updating	Update SIMEVI

Source: Authors

The first row of the Table 4 shows that all of the LIA groups, extension workers, promoters of SIMEVI and administration in MAG, JICA, researchers and ICT consultants have their own roles to play at each stage of the development cycle.

The overall process starts with “Start SIMEVI”—namely, the design and implementation of the basic structure and user-interface, then follows the stages as below:

- Recording Activities
- Data Management
- Analyzing Data
- Sharing Results

Then, the system will be updated.

As of December 2016, we are at the stages of Recording Activities and Data Management. Our first goal is to provide the LIA groups and extension workers with a system for visual and textual record keeping and sharing is so far being achieved. We are now checking the entries and preparing for the next phases: Analyzing data and Sharing data, in parallel with planning minor improvements to the user interfaces and functions.

Analysis, visualization and interpretation of the accumulated images and texts are all big challenges for the researchers in the following phases, and all the more so for utilizing them in policy formation by the administrators. Last but not least, communication of the findings to various stakeholders—especially to the practitioners onsite—is the key to the sustainable use of ICT for LIA.

We plan to use the framework for the AMAGRO case study (Section 3) based on the enhanced microeconomic model of LIA (Section 2) as a basic framework to analyze the impact of LIA as below:

- (1) How and to what extent do the repeated reflections on the meaning of life accompanied by the extension workers lead to:
 - (1-1) increase of a set of A
 - (1-2) reduction of ε
 - (1-3) identification and diversification of X_iin each LIA group?
- (2) How and to what extent does the above life improvement achievement correlate with other data on the socio-economic conditions of LIA groups?

We would especially like to emphasize the importance of addressing the first question, and that of ensuring the institutional and technological conditions for realizing it. As we pointed out in the introduction, no government or international cooperation agency would be opposed to life improvement as the primary development goal, but the task of monitoring its processes and evaluating impacts onsite has been arduous. The recent progress of ICT has started to make this endeavor more feasible than ever. However, it remains evident that a strong analog foundation is indispensable in the whole process.

Conclusion

In this article, we first examined the history of the Life Improvement Approach (LIA) since around the turn of the 20th century. We pointed out that self-determination and self-management (agency enhancement and pragmatism) are the two principal pillars of the present LIA elaborated in the JICA Tsukuba training courses, and also argued the importance of accompaniment by extension workers. In Section 2 we reformulated LIA as an enhanced microeconomic model based on Mokyr (2002) to clarify its relevance as a development policy. We then analyzed a case of a small association in Costa Rica with this model in Section 3, pointing out the necessity of operationalizing the model to fit the onsite practices by using the digital photos taken by the extension workers. In Section 4, we presented the blueprint of a new system for sharing images and texts of LIA—SIMEVI—in order to bridge the theoretical model and the onsite practices, and pointed out the importance of the analog foundation for SIMEVI to fully function as an engine to support LIA.

To close our argument, we are grateful to introduce the validation project of LIA started in the Ministry of Agriculture and Livestock (MAG), Costa Rica in 2015 under the initiative of the JICA trainees (Ministerio de Agricultura y Ganadería 2015). This project is a full-scale action

research project carried out inter-institutionally, first in Latin America, to evaluate the outcomes of LIA in various rural settings. Certainly, it is a formidable challenge. If managed appropriately and utilized extensively by a strong analog foundation, SIMEVI will function as an effective engine, namely an “active force transforming its environment.”

For all of those paths to lead to a virtuous cycle, it is worthwhile recalling the words by Yates in her study on the history of modern managerial systems in the American business system: “the technology alone was not enough—the vision to use it in new ways was needed as well” (Yates 1993, 275). With regard to LIA, the main resources to conceive a new vision come from the continuous life improvement efforts by LIA group members as the primary stakeholders. And they need accompaniment by extension workers and support from other stakeholders, including the researchers.

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Abstract (in Japanese)

要約

本論文では、20 世紀初頭のアメリカ合衆国、続く第二次世界大戦後の日本の経験を経て中南米諸国向けに JICA つくば研修コースで構築されてきた生活改善アプローチを分析し、それを踏まえて近年途上国でも普及してきた情報通信コミュニケーション技術（ICT）を取り入れた新しい生活改善アプローチ・モデルを提案する。

論文ではまず、現在の JICA つくば研修コースにおける生活改善アプローチが自己決定（self-determination）と自己管理（self-management）の二つの柱を持つこと、また、普及員による寄り添い（accompaniment）が重要であることを指摘する。続いて、生活改善アプローチを Mokyr（2004）のミクロ経済学モデルに基づいて再定式化し、開発政策との関連性を示す。さらに、コスタリカ共和国の小さな協同組合の事例を普及員が撮影したデジタル写真を使って分析し、同モデルを現場の実践と関連づける。そして、これらの分析を踏まえて、生活改善アプローチの理論と実践を繋ぐための仕組みとして、写真とテキストを共有する新しいデジタル・システム、SIMEVI を提示する。また、このシステムが発展途上国における生活改善アプローチの「エンジン」として十分に機能するためには、制度や技能など強力なアナログ基盤が必要であることを指摘して論文の結論とする。



Working Papers from the same research project

“An Interdisciplinary Study on Agency Enhancement Process and Factors”

JICA-RI Working Paper No. 121

The Motivation of Participants in Successful Development Aid Projects: A Self-Determination Theory Analysis of Reasons for Participating

Nobuo R. Sayanagi and Jiro Aikawa

JICA-RI Working Paper No. 123

User-Centered Approach to Service Quality and Outcome: Rationales, Accomplishments and Challenges

Toru Yanagihara

JICA-RI Working Paper No. 129

Empowerment through Enhancing Agency: Bridging Practice and Theory through Crystallizing Wisdom of a Third-Country Expert

Mine Sato