



Agronomía Colombiana

ISSN: 0120-9965

Universidad Nacional de Colombia, Facultad de Agronomía

Pachón-Ariza, Fabio; Bokelmann, Wolfgang; Ramírez-Miranda, César
Heritage and Patrimony of the Peasantry: an analytical framework to address rural development
Agronomía Colombiana, vol. 37, no. 3, 2019, September-December, pp. 283-296
Universidad Nacional de Colombia, Facultad de Agronomía

DOI: <https://doi.org/10.15446/agron.colomb.v37n3.76757>

Available in: <https://www.redalyc.org/articulo.oa?id=180363225008>

- How to cite
- Complete issue
- More information about this article
- Journal's webpage in redalyc.org

UAEH  redalyc.org

Scientific Information System Redalyc
Network of Scientific Journals from Latin America and the Caribbean, Spain and
Portugal

Project academic non-profit, developed under the open access initiative

Heritage and Patrimony of the Peasantry: an analytical framework to address rural development

Herencia y Patrimonios de Campesinado: un marco analítico para abordar el desarrollo rural

Fabio Pachón-Ariza^{1*}, Wolfgang Bokelmann², and César Ramírez-Miranda³

ABSTRACT

The term “rural development” is exceptionally multifaceted, which makes it difficult to define. This and other features make it a ‘wicked problem’, which means the consequences of rural developmental problems can create other complications. To date, the important discussion of rural development has dealt with productivity and economic concerns. This discussion has many crucial aspects such as the environment, infrastructure, and respect for fundamental rights. This paper describes the ‘Heritage and Patrimony of the Peasantry’ as an alternative analytical framework for addressing rural development. This analytical framework takes important topics from other rural development perspectives (primarily focused on food sovereignty principles). The heritage and patrimony of the peasantry framework moves away from the market point of view, which converts everything into an asset that can be marketed, and utilizes other sources of heritage. The peasantry has seven kinds of ‘heritages’ or ‘patrimonies’: natural, cultural, economic, physical, social, institutional, and human. These heritages or patrimonies are the bases of construction for a decent standard of living which will accomplish full rights for all rural inhabitants, i.e. rural development.

Key words: peasants, interdisciplinary research, quality of life, rural communities, rural development strategies.

RESUMEN

El término desarrollo rural es excepcionalmente multifacético, lo que dificulta su definición. Esta y otras características lo convierten en un “problema complejo”, lo que significa que las consecuencias de los problemas de desarrollo rural pueden crear otros problemas. Hasta la fecha, la importante discusión sobre el desarrollo rural ha sido sobre productividad y asuntos económicos. Sin embargo, esta discusión tiene muchos aspectos cruciales como el medio ambiente, la infraestructura y el respeto de los derechos fundamentales. Este estudio describe los Patrimonios del Campesinado, un marco analítico alternativo para abordar el desarrollo rural. Este marco analítico toma temas importantes de otras perspectivas de desarrollo rural, pero está enfocado principalmente en los principios de la soberanía alimentaria. Patrimonios del campesinado se aleja del punto de vista del mercado, que convierte todo en un activo que se puede comercializar, y se enfoca en otras facetas del patrimonio. El campesinado tiene siete tipos de patrimonios: naturales, culturales, económicos, físicos, sociales, institucionales y humanos. Estos patrimonios son la base de la construcción de un nivel de vida que, a su vez, permitirá alcanzar plenos derechos para todos los habitantes rurales, es decir, el desarrollo rural.

Palabras clave: campesinos, investigación interdisciplinaria, calidad de vida, comunidades rurales, estrategias de desarrollo rural.

Introduction

Rural development and the alleviation of poverty have been a primary concern for many governments in developing countries over the last few decades. Though we have seen impactful advances in many communities, the strategies and solutions proposed have not ensured changes to an acceptable quality of rural life nor have they been able to guarantee respect for all rural inhabitants’ rights (Scoones, 2015).

This paper is designed to suggest an alternative analytical framework for addressing rural development in a straightforward way. By analyzing and factoring in heritage and patrimony of the peasantry, this paper takes into consideration different points of view, based on a literature review and taking into account the idea of heritages and patrimonies, suggests a way in which all heritages can cooperate and, thereby, achieve a better life for all rural inhabitants.

Received for publication: 10 December, 2018. Accepted for publication: 03 December 2019

Doi: 10.15446/agron.colomb.v37n3.76757

¹ Department of Agri-food and Rural Development, Universidad Nacional de Colombia, Bogota (Colombia).

² Department of Agricultural Economics, Economics of Horticultural Production, Humboldt Universität zu Berlin, Berlin (Germany).

³ Universidad Autónoma de México, Mexico City (Mexico).

* Corresponding author: fapachona@unal.edu.co



Rural development, a 'wicked problem'

Rittel and Webber (1973) defined a 'wicked problem' as a malignant, tricky or aggressive condition enclosed in a vicious circle. A 'wicked problem' is difficult to explain and solve for several reasons. The first challenge stems from an incomplete understanding of a situation or contradicting information (Roberts, 2012). In other words, it is hard to define and fix something clearly and completely if there is a lack of comprehension (Kuhmonen, 2018). Second, with many people there are many opinions that make it difficult to decide how to tackle a problem (Norris *et al.*, 2016). Third, there are often great financial burdens and barriers associated with wicked problems (Gharehgozli *et al.*, 2017). Finally, it is difficult to make accurate assessments and thorough changes since there are so many intertwined problems (Dutta, 2018). On top of that, it is difficult to know if taking action could create unwanted/unforeseen complications (Probst and Bassi, 2014; Innes and Booher, 2016).

Rittel and Webber (1973) defined ten characteristics of wicked problems that could be applied in the scope of understanding the complexities of addressing and applying rural development issues and strategies. First, wicked problems have no conclusive formulation (Zijp *et al.*, 2016). Concerning rural development, several approaches from the technocratic point of view to a new political approach represented by food sovereignty have tried to address many issues. Each approach offers a set of steps and solutions for rural development problems. However, so far these solutions have not been comprehensive enough to have a definitive understanding of the entire problem(s) and how to fix it (Pachón *et al.*, 2016).

Second, it is difficult to quantify or declare success with wicked problems, primarily because they create many other problems (opposed to the limits of conventional problems that can be explained or interpreted) (Elia and Margherita, 2018). There is often a disagreement about the causes of problems of rural development. Sometimes politicians and technicians blame the idiosyncrasy of rural people (Castro-Arce and Vanclay, 2019). Others blame the policies, especially in developing countries. The fact is that rural inhabitants in many places remain trapped in poverty, illiteracy, and illness. In other words, rural development has exceeded the capacity and/or willingness of their governments' ability to deal with these very problems (Head and Alford, 2015).

Third, the solutions to wicked problems are dichotomous. There is no suggestion that some of these answers are perfect or better than any other answer. It is important that these approaches are tractable methods for the condition we are trying to enhance (Farrell and Hooker, 2013). Rural development approaches, especially from the technocratic perspectives, have proposed alternatives for solving the problems of rural communities. Unfortunately, these attempts have often led to unforeseen outcomes that can occasionally be extremely deleterious for community dynamics, economics, and the environment (Kay, 2009). New solutions create extra dimensions that must be integrated into an analysis before steps towards change are made that ensure that unintentional consequences do not arise (Luckey and Schultz, 2001).

Fourth, there is no pattern to follow when confronting a wicked problem, despite the guidance the past can offer. People working with wicked problems must build new ways and ideas as they go along (Dentoni and Bitzer, 2015). First and foremost, the widespread approaches have offered partial solutions for rural development challenges. Their focuses have mainly been on economic activities rather than on the people themselves. Their solutions have aimed to increase incomes as a way to isolate rural people. Every rural community has its needs and wishes, and the solutions to these needs must be constructed taking into consideration the opinion of rural people themselves. These processes, constructed from the bottom-up, require flexibility to accommodate dissimilar situations and, therefore, to maintain the legitimacy of the inclusion of people in the decision-making processes (Chambers, 1983).

Fifth, there are several explanations for a wicked problem, and the pertinence of the explanations depends on the particular perception of the designer. As described previously, the main approaches to rural development for explaining the consequences of rural problems is to propose a course of action to solve them (Gold *et al.*, 2018). The perspectives of the technocratic approach have focused their proposals on an economic point of view. From the green revolution to neoliberalism to the import substitution industrialization (ISI) to neostructuralism, the modernization of agricultural production has been deemed the answer to rural development problems. In contrast, a sociological approach has focused on the rural inhabitants' personal and communal needs. In the center we find the socio-technocratic approach, which analyses productive problems in a social context and proposes competitiveness as the way to solve them (Kay, 2009). Another example is the political approach

that has used food sovereignty to focus on the rights of rural inhabitants and consumers as its response to rural development problems (Pachón *et al.*, 2016).

Sixth, every negative consequence of a wicked problem is a symptom of another problem. Equally, the causes of problems are, at the same time, the consequences of others. Rural development problems are narrowly interconnected with the causes and consequences of many other problems (Andersson and Törnberg, 2018). For instance, illiteracy and a low level of education in rural areas are some of the reasons for other phenomena such as poverty, lack of participation, and low agricultural production. Likewise, when people do not know how to read and write, their integration into society is harder for them than it is for those who do know how to read and write (Leverenz, 2014). Rural poverty is narrowly related to low agricultural production, although a high agricultural production does not guarantee freedom from poverty. Clearly, identifying the main causes of rural development problems is a complicated task. That is why a multidisciplinary approach is necessary when addressing these problems (Pacanowsky, 1995; Norris *et al.*, 2016).

Seventh, a lack of an alleviation policy for a wicked problem has a decisive scientific test because society and scientists understand problems differently. The scientific approaches to addressing rural development are incomplete (Tietjen and Jørgensen, 2016). A multidisciplinary approach that takes the interactions and connections into consideration and then places the emphasis on the peoples' rights over economic concerns might be better for tackling a wicked problem, such as rural development. Rural development policy actions have partially failed in the last decades because of the lack of a "people first" mindset. For instance, the distribution of power among rural stakeholders remains concentrated in those that hold land, money, and political influence (Roberts, 2000).

Eighth, finding a "solution" to a wicked problem usually focuses on a design effort, opposed to a rigid strategy which reduces the likelihood of trial and error (Came and Griffith, 2018). Rural development seems to go beyond the capacity of the governments and public policies, which creates dissatisfaction among rural and, sometimes, urban inhabitants (Brugue *et al.*, 2015). Traditionally, public policies have addressed rural development problems based on a disciplinary policy, almost entirely avoiding integrating other concerns (Pachón *et al.*, 2016).

Ninth, every wicked problem is exceptional (Kolko, 2011; Andersson and Törnberg, 2018; Elia and Margherita, 2018).

Even though rural development challenges are similar in many places, the solutions vary drastically. The problems are similar because public policies, especially in developing countries, have followed the same pattern based on the green revolution and neoliberalism (Kay, 2009; Pachón *et al.*, 2016). Hence, the consequences of such policies trigger analogous problems and difficulties. However, the solutions to these problems are different everywhere (Bitsch, 2009), because they must be formulated based on the peculiarities of the rural areas and the idiosyncrasy of their people. Obviously, the rural inhabitants themselves should construct such solutions, furthering solution variances.

Tenth, the designers trying to tackle a wicked problem must be held responsible and accountable for their actions. Governments must acknowledge that they are responsible for the consequences of the application of rural policies that have tried to solve rural development problems (Xiang, 2013). However, in many places the rural inhabitants themselves have been suffering from the effects of such policies, due to a lack of accountability. Rural inhabitants are often isolated from society where their importance is not often recognized (Probst and Bassi, 2014).

Rural development is a complex and interdependent situation that is difficult to explain and comprehend (Anderson, 2003). It has been improperly understood, which means that the different approaches to address it have been incomplete. Some strategies have successfully helped to manage and solve problems. However, many problems related to rural development such as poverty, illiteracy, income inequality, lack of access to health care and education, degradation of the environment, and lack of access to credit and technical assistance still remain. Especially in developing countries, the persistence of issues such as poor infrastructure, isolation, and absence of social recognition only fuel the difficulties of solving problems of rural development (Chambers and Conway, 1992; Ellis and Biggs, 2001; Brass, 2002; Molina, 2010). Two significant points emerge from the above debate. What have the central themes for successful approaches to rural development been? And, what are the most important characteristics to take into consideration to approach and solve a wicked problem such as rural development?

How to address a wicked problem

The most efficient way to tackle a wicked problem, such as rural development, is through an interdisciplinary and transdisciplinary framework. The integration of different disciplines, points of view, and an innovative analytical

framework based on such amalgamation allows us to address the complexity of real life (Norris *et al.*, 2016; Elia and Margherita, 2018).

The characteristics of social problems regarding rural development are complex, ambiguous, and uncertain (König *et al.*, 2013). However, the disciplines and traditional approaches to planning try to simplify their approaches, splitting them up for the purpose of analyzing every component separately (Espina, 2007). Such separation reduces the scope of analysis of the methods, minimizing the attributes that emerge from the interaction of all the factors. Indeed, reality requires comprehensive analytical frameworks that overcome the boundaries of disciplines. Comprehensive analytical frameworks enable us to address complex problems successfully and efficiently throughout the process (McKee *et al.*, 2015; Henriksen, 2016).

A holistic analytical framework allows the identification of a complete and wide-ranging image of the problems. Such methodology attempts to tackle the complexity of problems and allows a better understanding of all their synergies and connections (Delgado and Rist, 2011). Equally, a comprehensive analytical framework realizes the emerging capacity of the problems in rural territories that are ever-changing. Usually, new situations, attributes, and problems appear according to the interaction of every component.

Besides the holistic analytical framework, adequate organization is necessary to address wicked problems. Members of an organization who usually come from diverse disciplines must share similar objectives, cooperate, and, most importantly, be able to manage heterogeneity and the complexity of the disciplines (König *et al.*, 2013). The organization must be able to manage conflicts stemming from various points of view. Finally, and maybe most importantly, the organization must take into consideration previous research and proposals that have addressed problems to avoid wasting significant time and energy trying to do something that somebody else has already done.

Interdisciplinary and transdisciplinary frameworks

The academic community (Dewey, 1938; Miguélez, 2009; Olivé, 2011; Raasch *et al.*, 2013) commonly defines an interdisciplinary framework as the integration, combination, or mixture of scientists of two or more disciplines, fields, bodies of knowledge, or modes of thinking. An interdisciplinary framework brings skills, techniques, concepts, and expertise to create meaning, explanations, solutions,

understanding, and alternatives for tackling complex problems that have been incompletely understood or are socially complicated (Norris *et al.*, 2016).

Scientists working under an interdisciplinary framework must demonstrate willingness, temperament, and commitment to cross the boundaries of disciplines because their results depend on the relationships, judgement, and dialogue with the scientists of other areas (Dentoni and Bitzer, 2015; Gharehgozli *et al.*, 2017). An interdisciplinary framework is necessary for innovation and, in fact, it has been stimulated by international funding (Millar, 2013). It operates primarily at a university level, because there is greater access to know-how, tools, and funds. In addition, universities offer transversal enrichment, prestige and the acquisition of reputation, learning of techniques, efficiency enhancement, and recruitment of scholars (van Rijnsoever and Hessels, 2011). However, its implementation and outcomes at the institutional level are still doubted by the scientific community (Elia and Margherita, 2018).

A transdisciplinary framework aims to understand and address complex problems through the interaction of diverse disciplines (Dentoni and Bitzer, 2015). Besides scientists of specific fields, this interaction includes other stakeholders who come from any discipline, for instance, peasants who can make relevant contributions (Olivé, 2011). The main goal of a transdisciplinary framework, besides tackling complexity, is to create novel concepts, methods, and approaches that improve on disciplines. Hence, in a transdisciplinary framework, there is a dialogue between the scientific and empirical knowledge, and as a result, interesting epistemological bridges are created (Miguélez, 2009) that strengthen both science and practice.

A transdisciplinary framework is greater than a mere sum of the disciplines. It is a collaboration among them, a method to merge knowledge where the boundaries of the disciplines are blurry (Espina, 2007). These methodologies are characterized by an emergent attribute that bridges the gap between disciplines and implies a novel transcultural, transnational, and transpolitical approach.

Zemelman (2001) argues that a transdisciplinary framework must take into consideration all the inputs and outputs as a unity of all the sides to explain and solve problems. He suggests avoiding methodologies focused on factorial logic. Instead, he proposes the implementation of a methodology focused on a matrix of complex relationships with reciprocal effects. In this matrix, the problem is analyzed as a network, emphasizing all the dimensions and connections

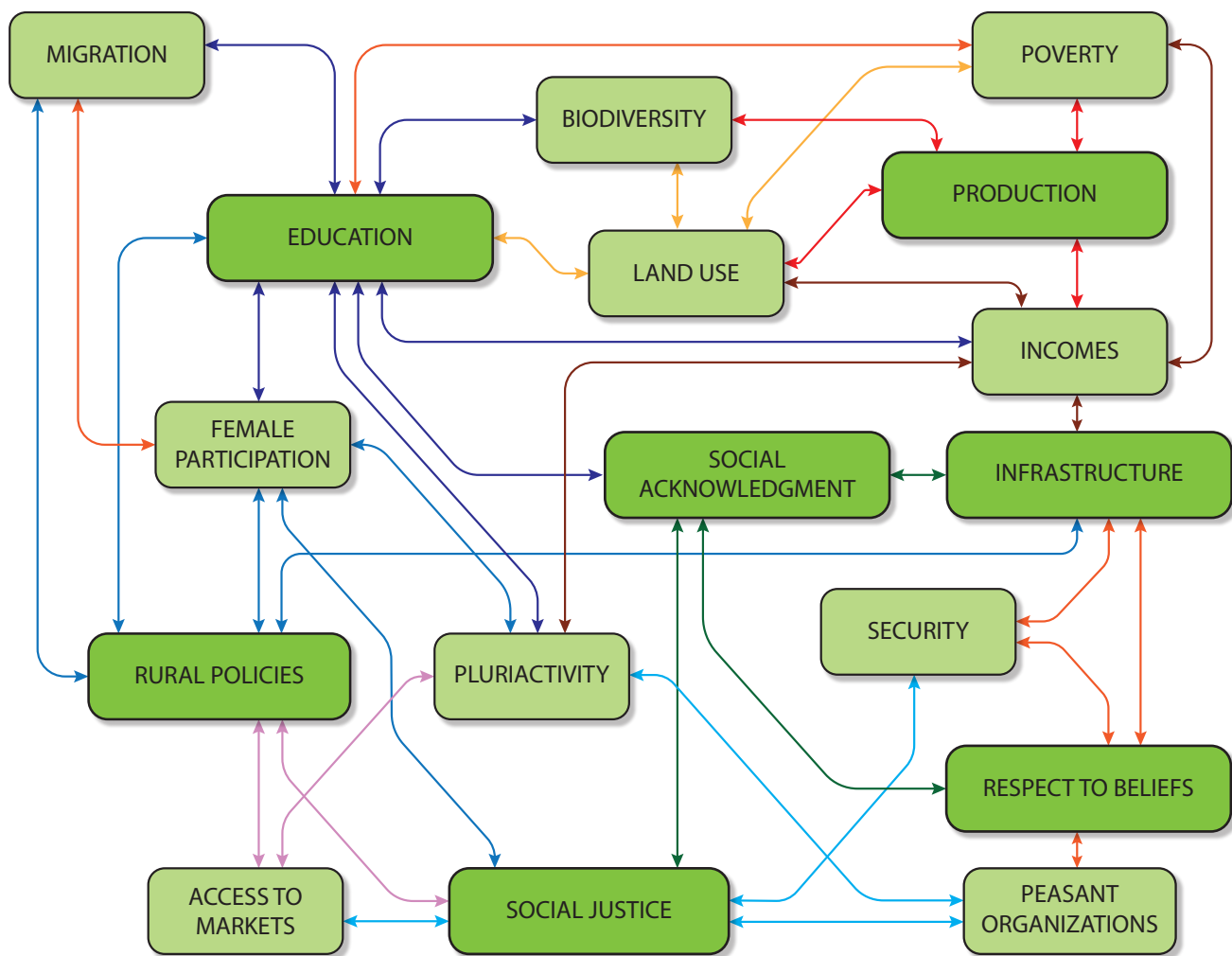


FIGURE 1. Rural development connections.

that are reliant on each other (Dutta, 2018). In the scope of rural development, challenges must be addressed and measured individually and communally to better understand output causes. In other words, the problems of rural development addressed in a transdisciplinary framework identify all the connections among the problems and the consequences of these relations (Fig. 1).

Figure 1 displays some of the problems of rural territories and some of their consequences. It also establishes the relationships among them, whether as cause or consequence. For example, education is one of the most important topics that determines the quality of life and exerts a strong influence on other subjects such as migration, land use, and poverty (Brown and Park, 2002). Education affects migration because in some rural areas young people who hold a medium or high educational level usually migrate to urban areas looking for jobs related to their backgrounds.

However, when educated people remain in rural areas, positive changes in land use, conservation of biodiversity, and female participation in decision making are evident (Gustafsson and Li, 2004). A similar description could be established with the other problems. For example, social justice, one of the main demands of the peasantry around the world, is directly connected to rural policies, social acknowledgement, and access to markets. Since rural developmental problems are narrowly associated with one another, none of them should be addressed separately. An interdisciplinary and transdisciplinary framework is decisive for solving most of the main problems and their consequences integrally. In this scenario, ‘Heritage and Patrimony of the Peasantry’ is the proposal of an analytical framework to address rural development that integrates many of the concerns of rural populations and incorporates the main characteristics of the most important rural developmental approaches, especially

food sovereignty (Desmarais, 2002; Holt-Giménez and Altieri, 2013).

Heritage and patrimony of the peasantry, an alternative analytical framework

Initially, it is important to define rural development and heritages that the peasantry offer us as an alternative viewpoint. This first stage aims to provide all rural residents with a basic standard of living, which can only be accomplished through the protection of the human rights of rural residents (Rosset, 2003; Borras Jr., 2009). Heritage and patrimony of the peasantry aims to organize, as much as possible the topics involved in problems of rural development by addressing them in an interdisciplinary and transdisciplinary framework. Heritage and patrimony

of the peasantry framework is based on four milestones: rural territory, heritage and patrimony, quality of rural life, and respect for human rights. Figure 2 shows the interaction of these milestones.

Rural territory

It is important to understand, in general, what rural territory means. A territory is defined as a space that holds feelings of identity and collectively constructed ideas of development whose transformation is a result of the mobilization and appropriation of the inhabitants (Schejtman and Berdegué, 2003; Jouini *et al.*, 2019). Besides the differences between the rural and urban concepts based on population totals, three main approaches have analyzed this concept: as a historical process; its functionality; and its environmental viewpoint. Rural territory as a historical

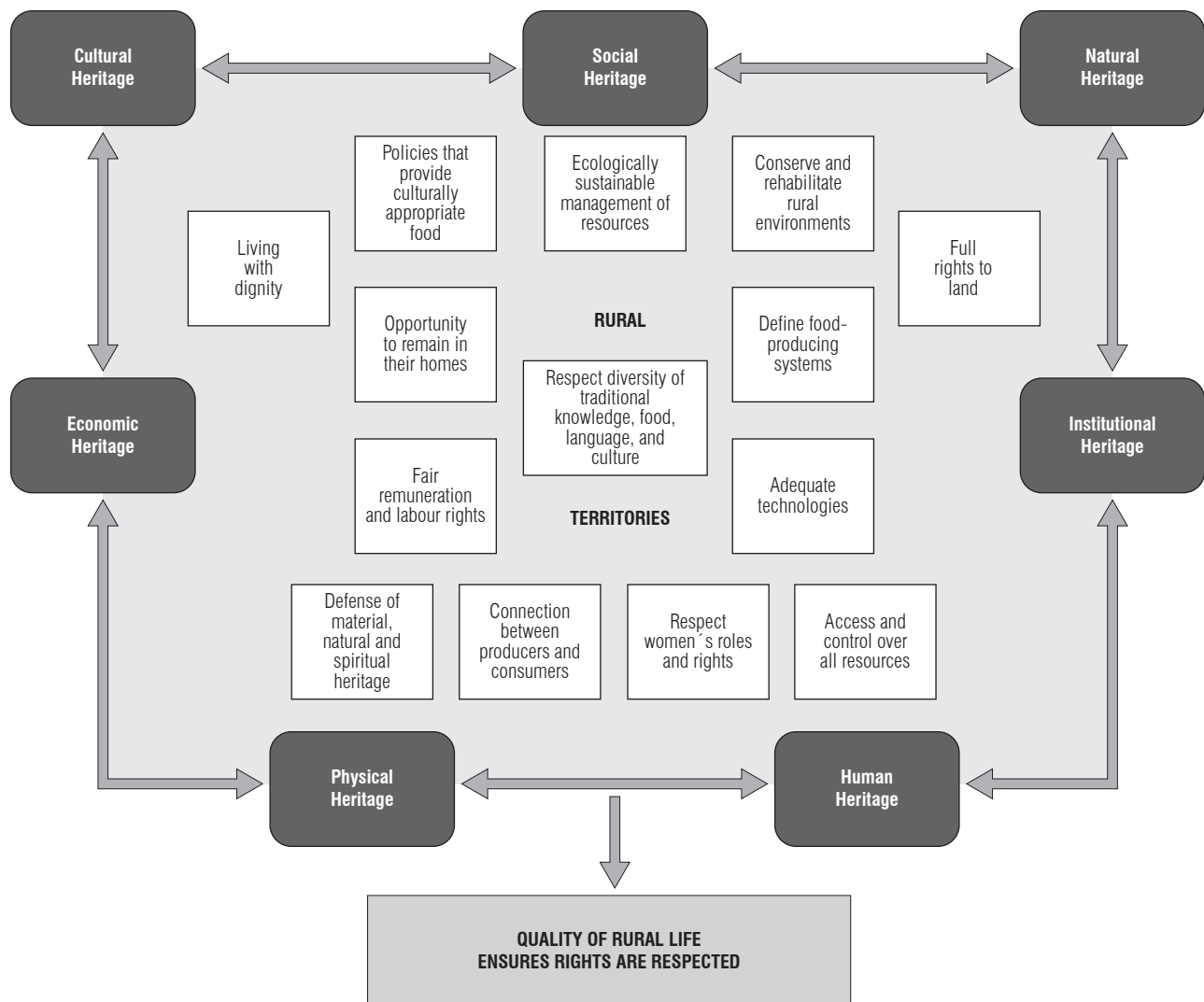


FIGURE 2. Scheme of the heritage and patrimony of the peasantry.

process is tightly linked to the meaning of the territory for its inhabitants. In this sense, rurality is a series of social networks whose inhabitants' livelihoods rely on rational use of available resources (Chambers and Conway, 1992). Furthermore, the relationships among these inhabitants are characterized by tradition and culture, the basis of rural identity. Rural territory and its inhabitants are characterized by a behavior that symbolizes an appropriation of the spaces and its resources, where the population shares feelings of identity, cooperation, and a sense of belonging (Dirven *et al.*, 2011). Even though many of the members of new generations have migrated to urban places, these feelings remain deeply rooted out of respect and love for their heritage and ancestry.

Traditionally, the functionality of the rural territories has been related to the economic activities performed there. For instance, crops or livestock production can be strongly influenced by culture and tradition. However, another type of agricultural production is strongly influenced by the market (Gutierrez-Montes *et al.*, 2009). That production is highly specialized, industrialized, and organized in groups of people very close to each other, or clusters by vicinity, according to the likelihood of using the natural resources, such as land and water, or the natural advantages for mining or tourism. These clusters ultimately seek to improve competitiveness and increase individual profit. The benefit of organization in clusters is its ability to facilitate the offering of technical services, inputs, and support on the assumption that the profitability could be transferred into the territory and to other inhabitants that do not participate in the cluster (Echeverri, 2011).

The environmental point of view highlights concerns related to climate change and the likelihood that rural activities mitigate the factors that increase global warming. For many years, when many people realized the consequences of global warming and the impact it has on normal lives, rural territories gained more relevance because they offered additional services compared to the traditional ones. These services are related to the likelihood of an alternative model of development based on ecosystem services, represented by environmental markets and environmental supply (Dirven *et al.*, 2011).

The previous discussion emphasizes the multifunctionality and pluriactivity of rural territories. However, beyond the multifunctionality of rural areas, it is crucial to take into account more integrative ideas such as the "inter-functionality" of rural territories. "Inter-functionality" means that there should be stable relationships, close interactions, and

deep integrations among all the functions and activities developed there (Florian, 2012; Kolstad, 2012). The primary goal of the "inter-functionality" is to preserve all the heritages of the peasantry present in these territories.

An example in which the inter-functionality of rural areas is not working appropriately are those territories where monoculture is predominant, undermining the possibility of producing food to feed their inhabitants. Many times, the target of the monoculture is a well-paid international market. The region of Uruapan in the State of Michoacan (Mexico) is a true archetype for this kind of production. Avocado is a widespread monoculture, mainly destined to the United States market. It is produced by peasants, small, medium and large farmers, as well as by multinational food companies. This monoculture, which is indeed well-paid, has increased the incomes of many people (input sellers, transporters, harvesters, and packers) who are directly and indirectly related to production (Pachón *et al.*, 2017b).

The international peasant movement La Via Campesina and its proposal for food sovereignty through the Declaration of Nyéléni (2007) describe the principles that, according to their deliberations, are essential for the improvement of their quality of life and will guarantee that the rights of the peasantry and all rural inhabitants are respected. Figure 2 shows some of these principles (the interaction inside the rural territories plane). In the background of these principles, a political dimension can be found because, although essential, the technocratic dimension has proved to be insufficient compared to the other rural aspects. Primarily, neoliberal and neocolonialist proposals, as well as the World Trade Organization, free trade agreements, and other policies exclude the peasantry (Pachón *et al.*, 2016). In this scenario, systems that allow unfair trade, such as dumping and subsidy schemes in developed countries and those that are against the likelihood of subsistence of small farmer production from developing countries are shunned (Barker, 2007).

Heritage and patrimony

The next crucial point is heritage and patrimony. At this level, seven kinds of heritage and patrimony that the peasantry must mix to improve their quality of life and ensure that their rights are respected are organized (Pachón, 2013). The first issue to discuss is the meaning of heritage followed by a description of each element in the proposed heritage. Heritage is a net of beliefs, traditions, and customs which a civilization considers significant to its history, culture, and identity (Littaye, 2016). Heritage must be understood in the scope of patrimony. They are the structures, articles,

or concepts that a civilization gets from the communities who lived before them. That means that for the current framework, heritage and patrimony could be assumed in the same way (Cominelli and Greffe, 2012). Beyond the concept, many aspects enrich and transform heritage and patrimony into one of the milestones of the current framework (Calvo *et al.*, 2017).

First, we must look at the social importance of heritage and patrimony. This constitutes the traces of memories that represent a social fact legitimized as something that reflects the importance of being analyzed, preserved, and inventoried. Hence, it is socially appreciated as a cultural phenomenon such as collective memory (Criado-boado and Barreiro, 2013). Then, a heritage and a patrimony are the results of social construction. It is a symbolism for the dissemination of collective memory.

Second, we must look at the cultural importance of heritage and patrimony. This is the repository that gathers common behaviors from different societies and groups, ways to solve difficulties, knowledge, values, symbols, and socio-cultural frameworks. Heritage and patrimony are used as a means to illustrate the culture, traditions, customs, background, and landscapes (Dormaels, 2012).

Finally, we identify the importance of heritage and patrimony. The acts appreciate heritage and patrimony as something personal and distinguishable; these are impossible to separate from the admiration and respect of peoples, communities, and individuals. For that reason, heritage and patrimony are valued, managed, and conserved. Something that is poorly appreciated is no longer valued as heritage and patrimony. These are a network of paths of life, beliefs, values, emotions, and meanings that offer a resource of identity and add value to social, political, and economic claims. It is the process of unification of identities (Santos, 1993).

Heritage and patrimony are the expressions of the accumulation of knowledge through time. They are the way to understand and link the history and the traditions from our past with our present. At the same time, heritage and patrimony are the best ways to construct the future (Calvo *et al.*, 2017). Figure 3 describes the heritage and patrimony of the peasantry framework in a virtuous circle. They must be, and are, appreciated and valued because they constitute the fundamental part of our lives. Venerated heritage and patrimony are protected and saved because they conserve part of our history. If heritage and patrimony are appreciated and protected, society, in general, will ponder the

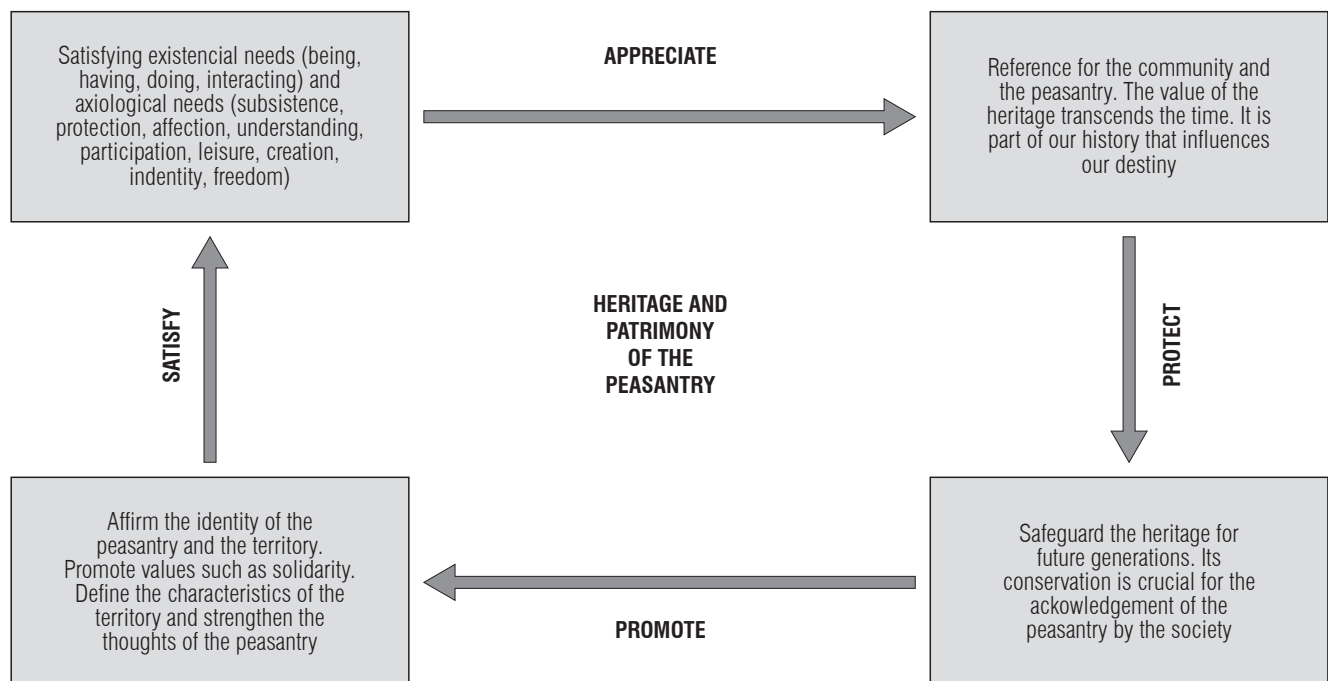


FIGURE 3. Virtuous circle of the heritage and patrimony of the peasantry.

importance of the peasantry and will encourage them in the coming generations. That promotion will inspire essential values of the peasantry. The cycle will then end but will start again when heritage and patrimony invoke the satisfaction of fundamental human needs (Max-Neef *et al.*, 1994).

The circle begins with the recognition of the importance and significance of the peasantry and their customs from society as a whole. People must appreciate how rich the peasantry is, more than producing food that is vital, to maintain their rootedness (Wittman *et al.*, 2010). People must also recognize that several customs of the peasantry are the best options for mitigating the consequences of climatic change. In addition, people must understand that the peasantry and their activities indirectly provide many of the products and raw materials used in urban areas. In other words, people must recognize the special qualities of the peasantry, the places where they live, and the things that they have done. If society properly appreciates the peasantry, their value would gradually increase, and, in turn, society will protect the peasantry (Patel, 2009).

The second step is the protection of the peasantry and their customs by society through collective action. For example, people must defend the peasantry from the policies that affect their customs and traditions, such as the disadvantages of free trade agreements. People can also help save the landscapes and rural environment against harm and damages to preserve them to mitigate the effects of climate change. This will help to defend the peasantry from expulsion from their lands and territories (Bebbington, 1999). When society protects the heritage and patrimony of the peasantry, society will, in turn, promote the heritage because it is important for new generations.

The third step is the promotion of the heritage and patrimony of the peasantry by society, especially among the new generations. An example of this can be, people supporting the peasantry by purchasing their products at a fair price. In this way, society helps the peasantry to reach a decent quality of life and helps to ensure respect for their human rights (Parrado and Molina, 2014).

The human scale of development defines basic measurements for human needs for both urban and rural populations. This is the last step of the circle (Max-Neef *et al.*, 1994). The heritage and patrimony of the peasantry allows the rural population to satisfy their human needs because their heritage creates levels of self-reliance. It also articulates the satisfaction of human needs with environmental,

technological, global and local processes, and for individuals within their communities. The human developmental scale describes two types of human needs: existential and axiological. These needs are multiple, interdependent, finite, few, and classifiable (Fig. 3). They create an interactive network whose key features are simultaneity, complementarity, and trade-offs, which characterize the process of satisfying human needs (Max-Neef *et al.*, 1994).

Finally, we must treat the heritage and patrimony of the peasantry as invaluable. They are not marketable as part of their identity, as a social construction. In this scenario, the idea of 'capital' is no longer used. Capital is associated with the process of purchasing commodities in one place and selling them in another for profit (Flora *et al.*, 2015). That means that the idea of the peasantry regarded just as a food supplier is excluded, forgetting its social prominence as part of the origin of the majority of societies. Because of these two different facets, patrimony can be categorized as tangible and intangible (Holt-Giménez and Altieri, 2013). Tangible patrimony is defined as those assets that are measurable, that people can touch. Intangible patrimony is the assets that are not able to be touched and which are difficult to clarify and describe (Calvo *et al.*, 2017).

Tangible Patrimony

Economic Heritage and Patrimony

Clearly, this heritage refers to monetary resources available for an individual, a family, and for the society. The discussion about this issue has been carried out in two different ways. First, we analyze the origin of these funds and how they have been earned. Then, we analyze the way family/members in a household spend their money. Regarding this it is important to understand that having more income does not necessarily improve rural development (Gutierrez-Montes *et al.*, 2009). Some examples of this are when the natural heritage or the environment are destroyed as a result of rural activities, or when these economic resources are the result of child labor, which impacts the social and cultural heritage. Regarding resources and the way they are spent, it is important to highlight that earning more money does not necessarily mean that the quality of life is going to improve. A household could increase its income but if the family's head spends money on alcohol consumption instead of on other aspects, such as education, rural development will not be achieved (Schultz *et al.*, 2002).

In rural territories, pluriactivity has become critical. Essentially, pluriactivity in economic heritage and patrimony is understood as alternative ways to earn money for the

household. Pluriactivity can improve post-harvest activities, which add value to products and create different modes to commercialize these products (Pachón *et al.*, 2016).

Monetary resources become indispensable when they are used as a way to strengthen other heritages, such as physical or human heritages. For instance, physical heritages are enhanced when the funds are spent to improve households (better floors, restrooms, and ceilings, among other things). Another example is when the funds are used as part of collective action to improve post-harvest infrastructure. Human heritage is strengthened when these funds are spent to improve education for children, healthcare, among others (World Bank, 2000).

Physical Heritage and Patrimony

Physical heritage and patrimony are imperative for improving the level of rural development. However, they have not been attended to in public policies in many developing countries due to the implementation of neoliberal dogmas. According to the neoliberal perspective, many investments in rural infrastructure must be focused on capitalist agriculture to improve competitiveness (Kay, 2009). Physical heritage and patrimony are essential elements for improving the quality of life and ensuring the respect of the rights of rural populations. For instance, roads and bridges are vital since they create access to other communities and markets. Hence, roads belong to the physical heritage, as well as health centers, schools, bridges, clean water, electricity services, among other things (Shen *et al.*, 2012).

Governments of several developing countries have abandoned the construction of adequate infrastructure. According to The Global Competitiveness Report 2014-2015, the countries with the worst infrastructure are in Africa and Asia. Latin American countries, in general, are in the middle of the ranking (Corrigan *et al.*, 2014). Besides the differences between developed and developing countries, the differences between rural and urban areas are significant because the preferences for investment are always prioritized for urban zones due to the population impacts.

We must also take into consideration the household infrastructure. In other words, the infrastructure that directly affects the quality of life for rural families is related to their homes, for example, access to clean water or restrooms. This aspect is narrowly related to economic heritage and patrimony because the individual use of the household incomes could improve household infrastructures (Shen *et al.*, 2012).

Natural Heritage and Patrimony

Natural heritage and patrimony refer to biological resources. Some examples are water resources, landscape and land. Water sources include lakes, rivers, canals, and ponds. Landscapes consist of mountains, hills, plateaus and highlands. Finally, land comprises soil, alluvium and clay. It also includes biodiversity such as insects, birds, frogs, fish, flowers, plants, seeds, and trees as well as genetic resources and ecosystems. Weather is also taken into account through sun, rain, wind, air, and snow. Most human actions have severely damaged all these resources (Sun *et al.*, 2019). This negative influence on natural patrimony has developed irreversible harm that currently impacts all of humanity.

We rely on the peasantry to manage all these shared resources and to use them based on ancestral knowledge. However, productive pressure and current policies do not support sustainable management. Recovering traditional ways to utilize these common resources will be beneficial for everyone. Natural heritage and patrimony managed with the ancestral knowledge of the peasantry could be a viable alternative for producing food for all humanity and for mitigating many effects of climatic change (Pachón *et al.*, 2016).

Intangible Patrimony

Cultural Heritage and Patrimony

Cultural heritage and patrimony are centered on identity but more importantly on creativity. This patrimony is reliant on acting according to traditions. Of course, spiritual and religious practices, as part of the connection with the world, belong to this patrimony (Desmarais, 2002). Unfortunately, neglectful policies have placed priority on commercial production, opposed to peasant activities. Examples of this kind of cultural heritage are the traditional communal labor or 'minga', terrace farming, ancestral forms of cropping as polyculture, ancestral pest control, and the barter system. In many places, these practices have been a means of survival for the peasantry (Declaration of Nyéléni, 2007). However, government policies, research preferences or non-governmental organizational practices, and cultural 'capitals' from hegemony groups have been privileged over the traditions of the peasantry (Flora *et al.*, 2015).

Human Heritage and Patrimony

Human heritage and patrimony could be described as the traditional knowledge of local people and the communities

to which they belong. Education, formal and informal, is possibly the best means for the construction of human heritage. As a result of instruction and experience, people and their communities obtain “know-how”, skills, and abilities. Therefore, they obtain new ways to address problems (Crawshaw *et al.*, 2014). Traditional knowledge is perhaps one of the most important human patrimonies, especially in rural areas, even though it has not been adequately valued in many places. However, it is essential to understand that people cannot acquire this knowledge in schools and universities (Patel, 2009). Without a doubt, human heritage and patrimony must be transferred through tradition, which needs to be taught through formal and informal education to children and adults alike.

Social Heritage and Patrimony

Social heritage and patrimony dictate belonging to a society and the ways of interacting inside that society. Many relationships build roads that establish and strengthen social collaboration. Committed relationships are the cornerstone of social patrimony. We know that trust is fundamental for creating real participation in social networks, such as communal organizations. These organizations must generate collective actions for consolidating cooperation, improving the quality of the rural life, and ensuring respect for their rights, besides pursuing individual benefits (Dormael, 2012).

Institutional Heritage and Patrimony

The institutional heritage can be understood as the net of formal and informal institutions and stakeholders that interact in rural areas. It also takes into account the rules that they develop, agree upon, and implement for regulating access to power and resources. Of course, these rules contribute towards improving the quality of life, and hence, they lead to rural development, by providing equitable participation for all the stakeholders involved, but primarily for those who have been traditionally excluded (Kay, 2009; Pachón *et al.*, 2016).

These kinds of arrangements, which many times are informal, can be carried out through the involvement and empowerment of the stakeholders. Empowerment is the result of the interaction of all heritages and patrimonies described above. This interaction maintains a virtuous circle that ensures the improvement of the other heritages, while at the same time creates the ability to improve the quality of life through respect for the rights of rural inhabitants.

Heritages and patrimonies can also be analyzed from an economic/sociological point of view (Leibenstein, 1984;

Biggart and Beamish, 2003). Sometimes, institutional arrangements between different stakeholders have been constructed by custom or tradition. These habits, routines, or conventions become part of the everyday practices and ways of life for the entire community, which must be adopted as part of normal behavior. In many cases, conventions correspond to the prevailing political-economic model. However, some of these habits play out in unusual ways, meaning that these conversations can become an alternative for many rural inhabitants.

Quality of life and respect for human rights

The final key point and main goal for rural development is quality of life and respect for human rights of the rural population, which is its simplest definition. Since there is great academic discussion over the definition of quality of life and human rights, for this discussion we will use the human scale of development. Quality of life could be understood as the satisfaction of every fundamental human need. This will happen through the increase of self-reliance and the articulation of different levels among populations: the environment, technology, globalization and local processes, individuality and community. Of course, the primary focus is on people, because fundamental human needs are measured through people’s involvement, prioritizing both autonomy and diversity. It aims to transform people, who are often perceived as an object, into actors of development. Participatory democracy, constructed from the bottom up, stimulates real solutions for real problems, which can satisfy all fundamental human needs (Max-Neef *et al.*, 1994).

To sum up, the peasantry must combine all their heritages and patrimonies with the purpose of improving the quality of life and ensuring that their rights are respected. The interaction of heritages creates the conditions under which the peasantry will be able to identify and satisfy their own fundamental human needs. This construction must take into consideration their beliefs, ideas, and meanings in order to better satisfy all fundamental human needs. This means that the peasantry must internally identify its needs according to the particular circumstances of each community. This concern is paramount because the generalization of problems and solutions has shown poor results in many rural places (Pachón *et al.*, 2017a; 2017b)

Conclusions

Rural development has many characteristics of ‘wicked problems’, which is why we have evaluated and examined it from different viewpoints. As a result, stakeholders often complain or disagree about the proposed alternatives. That

is why this paper considers all stakeholders' interests in rural matters. The current analytical framework, based on the idea of the heritages and patrimonies that peasantry hold, suggests a path where all heritages interact and, thereby, helps us achieve a better level of rural development.

The heritages and patrimonies of the rural small farmer interact inside the rural households, among rural families, and, finally, in rural territories. In all cases, the stakeholders must take possession of these heritages, mobilizing all their knowledge and traditions. In turn, it is important that society, as a whole, recognizes the importance of the peasantry and their heritages. When that recognition happens, reaching satisfactory rural development will be possible for all rural inhabitants.

However, the analytical framework of the heritages and patrimonies of the peasantry still has gaps to be filled. It is necessary to propose a methodology that validates the framework and measures the level of these patrimonies. The analytical framework requires some examples for the application of these indicators in rural territories with rural families. Regarding this concern, a question must be asked: What indicators can be used to measure the level of these heritages? Finally, we must ask: Do public policies allow the improvement of heritages and patrimonies? We also must take into account the involvement of all rural stakeholders while trying to tackle these concerns.

Literature cited

- Anderson, J. 2003. Risk in rural development: challenges for managers and policy makers. *Agricult. Syst.* 75(2-3), 161-197. Doi: 10.1016/S0308-521X(02)00064-1
- Andersson, C. and P. Törnberg. 2018. Wickedness and the anatomy of complexity. *Futures* 95, 118-138. Doi: 10.1016/j.futures.2017.11.001
- Barker, D. 2007. The rise and predictable fall of globalized industrial agriculture. A report from the International Forum on Globalization. San Francisco, USA.
- Bebbington, A. 1999. Capitals and capabilities: a framework for analyzing peasant viability, rural livelihoods and poverty. *World Dev.* 27(12), 2021-2044. Doi: 10.1016/S0305-750X(99)00104-7
- Biggart, N.W. and T.D. Beamish. 2003. The economic sociology of conventions: habit, custom, practice, and routine in market order. *Annu. Rev. Sociol.* 29. Doi: 10.1146/annurev.soc.29.010202.100051
- Bitsch, V. 2009. Grounded Theory: a research approach to wicked problems in agricultural economics. Mini-symposium qualitative Agricultural Economics at the International Conference of Agricultural Economists. 2009, August 16-22, Beijing, China.
- Borras Jr., S.M. 2009. Agrarian change and peasant studies: changes, continuities and challenges-an introduction. *J. Peasant Stud.* 36(1), 5-31. Doi: 10.1080/03066150902820297
- Brass, T. 2002. Latin American peasants - new paradigms for old? *J. Peasant Stud.* 29(3, 4), 1-40. Doi: 10.1080/0306615041233131019c
- Brown, P.H. and A. Park. 2002. Education and poverty in rural China. *Econ. Edu. Rev.* 21(6), 523-541. Doi: 10.1016/S0272-7757(01)00040-1
- Brugue, Q., R. Canal, and P. Paya. 2015. Managerial intelligence to address "wicked problems": the case of interdepartmental committees. *Gestión y Política Pública* 24(1), 85-130.
- Calvo, I., O. Petit, and F. Vivien. 2017. Common patrimony: a concept to analyze collective natural resource management. The case of water management in France. *Ecol. Econ.* 137, 126-132. Doi: 10.1016/j.ecolecon.2017.02.028
- Came, H. and D. Griffith. 2018. Tackling racism as a "wicked" public health problem: enabling allies in anti-racism praxis. *Soc. Sci. Med.* 199, 181-188. Doi: 10.1016/j.socscimed.2017.03.028
- Castro-Arce, K. and F. Vanclay. 2019. Transformative social innovation for sustainable rural development: an analytical framework to assist community-based initiatives. *J. Rural Stud.* Doi: 10.1016/j.jrurstud.2019.11.010
- Chambers, R. 1983. *Rural development: putting the last first*. Routledge, London. Doi: 10.4324/9781315835815
- Chambers, R. and G. Conway. 1992. Sustainable rural livelihoods: practical concepts for the 21st century. Discussion paper no. 296. Institute of Development Studies, UK.
- Cominelli, F. and X. Greffe. 2012. Intangible cultural heritage: safeguarding for creativity. *Convention for the safeguarding of the intangible cultural Heritage City Cult. Soc.* 3(4), 245-250. Doi: 10.1016/j.ccs.2012.10.003
- Corrigan, G., R. Crotti, M. Hanouz, and C. Serin. 2014. Assessing Progress toward Sustainable Competitiveness. pp. 53-84. In: Schwab, K. (ed.). *The Global Competitiveness Report 2014-2015*. World Economic Forum, Geneva.
- Crawshaw, L., S. Fèvre, L. Kaesombath, B. Sivilai, S. Boulom, and F. Southammavong. 2014. Lessons from an integrated community health education initiative in rural Laos. *World Dev.* 64, 487-502. Doi: 10.1016/j.worlddev.2014.06.024
- Criado-Boado, F. and D. Barreiro. 2013. El patrimonio era otra cosa. *Estudios atacameños - Arqueología y antropología surandinas* (45), 5-18. Doi: 10.4067/S0718-10432013000100002
- Declaration of Nyeleni. 2007. *Chain Reaction* 100, 16.
- Delgado, F. and S. Rist. 2011. La transdisciplinariedad y la investigación participativa en una perspectiva de diálogo intercultural e intercientífico. Working document, AGRUCO/CAPTURED, La Paz.
- Dentoni, D. and V. Bitzer. 2015. The role(s) of universities in dealing with global wicked problems through multi-stakeholder initiatives. *J. Clean. Prod.* 106, 68-78. Doi: 10.1016/j.jclepro.2014.09.050
- Desmarais, A. 2002. The vía campesina: consolidating an international peasant and farm movement. *J. Peasant Stud.* 29(2), 91-124. Doi: 10.1080/714003943
- de Sousa Santos, B. 1993. Modernidade, Identidade a Cultura de Fronteira. *Tempo Soc. USP* 5(1-2), 31-52. Doi: 10.1590/ts.v5i1/2.84940
- Dewey, J. 1938. Unity of science as a social problem. pp. 29-38. In: *International Encyclopedia of Unified Science*, vol. 1 (1). University of Chicago Press, Chicago, USA.

- Dirven, M., R. Echeverri-Perico, C. Sabalain, A. Rodríguez, D. Candia-Baeza, C. Peña, and S. Faiguenbaum. 2011. Hacia una nueva definición de "rural" con fines estadísticos en América Latina. Comisión Económica para América Latina CEPAL, Santiago de Chile.
- Dormaeys, M. 2012. Identidad, comunidades y patrimonio local: una nueva legitimidad social. *Alteridades* 22(43), 9-19.
- Dutta, K. 2018. Solving wicked problems: searching for the critical cognitive trait. *Int. J. Manage. Educ.* 16(3), 493-503. Doi: 10.1016/j.ijme.2018.09.002
- Echeverri, R. 2011. Reflexiones sobre lo rural: economía rural, economía de territorios. Hacia una nueva definición de "rural" con fines estadísticos en América Latina. Comisión Económica para América Latina CEPAL, Santiago de Chile.
- Elia, G. and A. Margherita. 2018. Can we solve wicked problems? a conceptual framework and a collective intelligence system to support problem analysis and solution design for complex social issues. *Technol. Forecast. Soc. Change* 133, 279-286. Doi: 10.1016/j.techfore.2018.03.010
- Ellis, F. and S. Biggs. 2001. Evolving themes in rural development 1950s-2000s. *Dev. Policy Rev.* 19(4), 448. Doi: 10.1111/1467-7679.00143
- Espina, M.P. 2007. Complejidad, transdisciplina y metodología de la investigación social. *Utopía y Praxis Latinoamericana* 12(38), 29-43.
- Farrell, R. and C. Hooker. 2013. Design, science and wicked problems. *Des. Stud.* 34(6), 681-705. Doi: 10.1016/j.destud.2013.05.001
- Flora, C.B., J. Flora, and S. Gasteyer. 2015. *Rural communities: legacy and change*. Westview Press, Boulder, United States.
- Florian, V. 2012. Territorial Innovation Strategies. *Agricultural Economics and Rural Development* 9(1), 47-60.
- Gutierrez-Montes, I., M. Emery, and E. Fernández-Baca. 2009. The sustainable livelihoods approach and the community capitals framework: the importance of system-level approaches to community change efforts. *Community Dev. J.* 40(2), 106-113. Doi: 10.1080/15575330903011785
- Holt-Giménez, E. and M. Altieri. 2013. Agroecology, food sovereignty, and the new green revolution. *Agroecol. Sust. Food* 37(1), 90-102.
- Kay, C. 2009. Development strategies and rural development: exploring synergies, eradicating poverty. *J. Peasant Stud.* 36(1), 103-137. Doi: 10.1080/03066150902820339
- Kolko, J. 2011. Wicked problems. pp. 96-111. In: Kolko, J. (ed.). *Thoughts on interaction design*. Doi: 10.1016/B978-0-12-380930-8.50007-3
- Kolstad, A. 2012. Inter-functionality between mind, biology and culture: some epistemological issues concerning human psychological development. pp. 19-41. In: Seidl-De-Moura M.L. (ed.). *Human development - Different perspectives*. IntechOpen, London. Doi: 10.5772/2272
- Gold, S., J. Muthuri, and G. Reiner. 2018. Collective action for tackling "wicked" social problems: a system dynamics model for corporate community involvement. *J. Clean. Prod.* 179, 662-673. Doi: 10.1016/j.jclepro.2017.11.197
- Gharehgozli, A.H., J. Mileski, A. Adams, and W. von Zharen. 2017. Evaluating a "wicked problem": a conceptual framework on seaport resiliency in the event of weather disruptions. *Technol. Forecast. Soc. Change* 121, 65-75. Doi: 10.1016/j.techfore.2016.11.006
- Gustafsson, B. and S. Li. 2004. Expenditures on education and health care and poverty in rural China. *China Econ. Rev.* 15(3), 292-301. Doi: 10.1016/j.chieco.2003.07.004
- Head, B.W. and J. Alford. 2015. Wicked problems: implications for public policy and management. *Adm. Soc.* 47(6), 711-739. Doi: 10.1177/0095399713481601
- Henriksen, D. 2016. The seven transdisciplinary habits of mind of creative teachers: an exploratory study of award-winning teachers. *Think. Skills Creativity* 22, 212-232. Doi: 10.1016/j.tsc.2016.10.007
- Innes, J.E. and D.E. Booher. 2016. Collaborative rationality as a strategy for working with wicked problems. *Landscape Urban Plan.* 154, 8-10. Doi: 10.1016/j.landurbplan.2016.03.016
- Jouini, M., J. Burte, Y. Biard, N. Benaissa, H. Amara, and C. Sinfort. 2019. A framework for coupling a participatory approach and life cycle assessment for public decision-making in rural territory management. *Sci. Total Environ.* 655, 1017-1027. Doi: 10.1016/j.scitotenv.2018.11.269
- König, B., K. Diehl, K. Tscherning, and K. Helming. 2013. A framework for structuring interdisciplinary research management. *Research Policy* 42(1), 261-272. Doi: 10.1016/j.respol.2012.05.006
- Kuhmonen, T. 2018. Systems view of future of wicked problems to be addressed by the common agricultural policy. *Land Use Policy* 77, 683-695. Doi: 10.1016/j.landusepol.2018.06.004
- Leibenstein, H. 1984. On the economics of conventions and institutions: an exploratory essay. *J. Inst. Theor. Econ.* 74-86.
- Leverenz, C.S. 2014. Design thinking and the wicked problem of teaching writing. *Computers and Composition* 33, 1-12. Doi: 10.1016/j.compcom.2014.07.001
- Littaye, A. 2016. The multifunctionality of heritage food: the example of pinole, a Mexican sweet. *Geoforum* 76, 11-19. Doi: 10.1016/j.geoforum.2016.08.008
- Luckey, D.S. and K.P. Schultz. 2001. Defining and coping with wicked problems: the case of Fort Ord building removal. MSc thesis, Naval Postgraduate School, Monterey, USA.
- Max-Neef, M., A. Elizalde, and M. Hopenhayn. 1994. *Desarrollo a escala humana: conceptos, aplicaciones y algunas reflexiones*. Vol. 66. Icaria Editorial, Barcelona, Spain.
- McKee, A., M. Guimarães, and T. Pinto-Correia. 2015. Social capital accumulation and the role of the researcher: an example of a transdisciplinary visioning process for the future of agriculture in Europe. *Environ. Sci. Policy* 50, 88-99. Doi: 10.1016/j.envsci.2015.02.006
- Miguélez, M. 2009. Hacia una epistemología de la complejidad y transdisciplinariedad. *Utopía y Praxis Latinoamericana* 14(46), 11-31
- Millar, M. 2013. Interdisciplinary research and the early career: the effect of interdisciplinary dissertation research on career placement and publication productivity of doctoral graduates in the sciences. *Res. Policy* 42(5), 1152-1164. Doi: 10.1016/j.respol.2013.02.004

- Molina, J.P. 2010. Keys for rural territorial development. *Agron. Colomb.* 28(3), 421-427.
- Norris, P.E., M. O'Rourke, A.S. Mayer, and K.E. Halvorsen. 2016. Managing the wicked problem of transdisciplinary team formation in socio-ecological systems. *Landscape Urban Plan.* 154, 115-122. Doi: 10.1016/j.landurbplan.2016.01.008
- Olivé, L. 2011. Interdisciplina y transdisciplina desde la filosofía. *Ludus Vitalis*, XIX(35), 251-256.
- Pacanowsky, M. 1995. Team tools for wicked problems. *Organ. Dyn.* 23(3), 36-51. Doi: 10.1016/0090-2616(95)90024-1
- Pachón, F. 2013. Food sovereignty and rural development: beyond food security. *Agron. Colomb.* 31, 362-377.
- Pachón, F., W. Bokelmann, and C. Ramirez. 2016. Rural development thinking, moving from the green revolution to food sovereignty. *Agron. Colomb.* 34(2), 267-276. Doi: 10.15446/agron.colomb.v34n2.56639
- Pachón, F., W. Bokelmann, and C. Miranda. 2017a. Heritage and patrimony of the peasantry framework to address rural development and its application in Colombia. *Acta Agron.* 66, 347-359. Doi: 10.15446/acag.v66n3.60949
- Pachón, F., W. Bokelmann, and C. Miranda. 2017b. Heritage and patrimony of the peasantry framework and rural development indicators in rural communities in Mexico. *Rev. Econ. Sociol. Rural* 55, 199-226. Doi: 10.1590/1234-56781806-94790550201
- Parrado, A. and J. Molina. 2014. Mercados campesinos: modelo de acceso a mercados y seguridad alimentaria en la región central de Colombia. Oxfam, Bogotá.
- Patel, R. 2009. Food sovereignty. *J. Peasant Stud.* 36(3), 663-706. Doi: 10.1080/03066150903143079
- Probst, G. and A. Bassi. 2014. Tackling complexity: a systemic approach for decision makers. Greenleaf publishing, Sheffield, UK.
- Raasch, C., V. Lee, S. Spaeth, and C. Herstatt. 2013. The rise and fall of interdisciplinary research: the case of open source innovation. *Res. Policy* 42(5), 1138-1151. Doi: 10.1016/j.respol.2013.01.010
- Rittel, H.W. and M. Webber. 1973. Dilemmas in a general theory of planning. *Policy sciences* 4(2), 155-169. Doi: 10.1007/BF01405730
- Roberts, N. 2000. Wicked problems and network approaches to resolution. *Int. Public Manage. Rev.* 1(1), 1-19.
- Roberts, N. 2012. Tackling wicked problems in Indonesia: a bottom-up design approach to reducing crime and corruption. Naval Postgraduate School, Monterey, USA.
- Rosset, P. 2003. Food sovereignty: global rallying cry of farmer movements. *Food First Backgrounder* 9(4), 1-4.
- Schejtman, A. and J. Berdegue. 2003. Desarrollo territorial rural. RIMISP, Santiago.
- Schultz, S., S. Arndt, G. Lutz, A. Petersen, and C. Turvey. 2002. Alcohol use among older persons in a rural state. *Am. J. Geriatr. Psychiatry* 10(6), 750-753. Doi: 10.1097/00019442-200211000-00014
- Scoones, I. 2015. Sustainable rural livelihoods and rural development. Fernwood Publishing, Winnipeg, Canada. Doi: 10.2458/v23i1.20254
- Shen, L., S. Jiang, and H. Yuan. 2012. Critical indicators for assessing the contribution of infrastructure projects to coordinated urban-rural development in China. *Habitat Int.* 36(2), 246. Doi: 10.1016/j.habitatint.2011.10.003
- Sun, W., X. Xu, Z. Lv, H. Mao, and J. Wu. 2019. Environmental impact assessment of wastewater discharge with multi-pollutants from iron and steel industry. *J. Environ. Manage.* 245, 210-215. Doi: 10.1016/j.jenvman.2019.05.081
- Tietjen, A. and G. Jørgensen. 2016. Translating a wicked problem: a strategic planning approach to rural shrinkage in Denmark. Special Issue Working with wicked problems in socio-ecological systems: more awareness, greater acceptance, and better adaptation. *Landsc. Urban Plan.* 154, 29-43. Doi: 10.1016/j.landurbplan.2016.01.009
- van Rijnsoever, F.J. and L. Hessels. 2011. Factors associated with disciplinary and interdisciplinary research collaboration. *Res. Policy* 40(3), 463-472. Doi: 10.1016/j.respol.2010.11.001
- Wittman, H., A.A. Desmarais, and N. Wiebe. 2010. The origins and potential of food sovereignty. pp. 1-14. In: Wittman, H.K., A.A. Desmarais, and N. Wiebe (eds.). *Food sovereignty: Reconnecting food, nature and community*. Pambazuka, Oxford, United Kingdom.
- World Bank. 2000. Rural Development Indicators Handbook. Washington, D.C.
- Xiang, W.N. 2013. Working with wicked problems in socio-ecological systems: awareness, acceptance, and adaptation. *Landsc. Urban Plan.* 110, 1-4. Doi: 10.1016/j.landurbplan.2012.11.006
- Zemelman, H. 2001. Pensar teórico y pensar epistémico: los retos de las ciencias sociales latinoamericanas. Instituto Pensamiento y Cultura en América Latina, A.C. (IPECAL), Mexico.
- Zijp, M.C., L. Postuma, A. Wintersen, J. Devilee, and F.A. Swartjes. 2016. Definition and use of solution-focused sustainability assessment: a novel approach to generate, explore and decide on sustainable solutions for wicked problems. *Environ. Int.* 91, 319-331. Doi: 10.1016/j.envint.2016.03.006